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THE AMERICAN GAS LIGHT JOURNAL

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[OFFICIAL NOTICE.]

Change in Location of Secretary's Office, American Gas Light Association.

OFFICE AMERICAN GAS LIGHT ASSOCIATION,
32 PARK PLACE, ROOM 36, NEW YORK, May 10, 1884.

The Secretary would call the attention of the members of the Association to the change in his address. Communications to him may be directed to the above address, or care of the Gas Company, Bergen Point, N. J.

C. J. RUSSELL HUMPHREYS, Secretary.

[OFFICIAL NOTICE.]

Postponement of the Annual Meeting of the Central New York Gas Engineers Association.

SYRACUSE, NEW YORK, April 27, 1884.

The Fifth Annual Meeting of the Central New York Gas Engineers Association will be held at Corning, N. Y., on

THURSDAY, JUNE 5TH, 1884,

instead of on May 22d, as previously announced in the JOURNAL of April 16. Active membership in the Association is open to any person interested in gas manufacture in Central and Western New York, and all such are invited to join. A cordial invitation to members of other associations to be present at the meeting is hereby extended. W. A. WOOD, *Secretary.*

THE ST. LOUIS MEETING OF THE WESTERN GAS ASSOCIATION.

When speaking of the Sixth Annual Meeting of the Western Gas Association, just a twelvemonth ago to-day, the term "red letter" days was applied to the dates of May 9th, 10th, and 11th, 1883, as justly indicative of the rosy color which pervaded the doings of that memorable and successful gathering. Red being one of the warmest colors embraced within the pale of our knowledge, we are now somewhat at a loss for the name of a hue with which to convey to our readers the brilliancy and completeness of the halo that enveloped the Seventh Annual Meeting of the Western Brotherhood. Confessing our inability to name a single color that will do justice to the occasion, we will invoke the aid of a harmonious blending, and assert that, if the 1883 gathering was red, its successor of 1884 was nothing short of "red, white, and blue." That it would become our evident pleasant duty to chronicle a successful issue of the seventh annual convention was early made apparent through noting the earnest and ardent persistency of Secretary A. W. Littleton in his attention to the duties of stirring up his fellow-members to the necessity of concerted action, in order that all might share alike in the credit of the good work to be accomplished, and that the reputation of the Western Gas Association would be but carried onward and upward as the outcome of such united effort. The appeals of the Secretary fell upon good ground, and the valuable results of the St. Louis convention are such as to recompense, many times over, those who assisted in and contributed to the programme at the Southern Hotel, St. Louis, Mo., on the 14th, 15th, and 16th days of last month.

An examination of the roll-call (which, with the first installment of our

official report of the proceedings, will be found commencing on page 263 of the present issue) renders any comment on the attendance unnecessary; but we cannot forego mentioning, as an evidence of the widespread attention that is being called to the value of this Association as an educator, that 36 new applications for membership were acted upon favorably. Everyone was convinced, some two or three years ago, that this "young giant of the west" had a great future before it, but who was there among us that calculated upon such a vastly surprising rapidity of growth? But this very thing proves that the value of our oft-repeated statements concerning the benefits to be gained from membership in such organizations is now becoming generally acknowledged.

The annual address of President J. B. Howard, of Dubuque, Iowa, shows in what direction the thoughtful ones of the gas fraternity are still anxious. The problem of security from the attacks of raiders is the one to be solved; and while we dare not hope with Mr. Howard for the speedy discovery of a principle broad enough to cover all cases, or possessed of sufficient elasticity to be self-regulating, we certainly are a unit with him in the belief that the less we have to do with politicians and politics, in invoking their aid, or its assistance, in unraveling the badly tangled skein of gas polity, the sooner will the desired solution of the perplexing question be arrived at. Mr. Howard's affectionate tribute to the memories of Mr. Price and Major Dresser was graceful and consoling; it was just like the warm heart of the man to utter such sentiments. It is here regretfully stated that President Howard was suffering severely as to his health; and, in fact, the old Trojan announced that were it not for the attendance of a delegation of visitors from the East he would have been obliged to forego his presence at the meeting. Talk about East, West, North, and South as existing among the gas fraternity—there are no longer any such divisions in the business; it is simply one vast common brotherhood, measurable by counting the gas plants between Maine and California. The reception given to the visiting delegation from this side of the Alleghenies was most cordial and flattering; as for ourselves, we had "been there before," and knew, from previous pleasant experience, about what was in store for us. Now that others in our neighborhood have tasted of the hearty, generous, whole-souled welcome extended alike to all, we can appeal to them for confirmation of the assertion that the hospitalities of our entertainers were of the most royal description.

After introducing the different visitors to the convention, Mr. Howard, from the continuance of his unfavorable state of health, was obliged to vacate the chair, Vice-President T. G. Lansden taking his place, who most ably, even at such short notice, carried out the duties of the office. We are glad to state that Mr. Howard subsequently recovered himself sufficiently to be in attendance during the closing business sessions of the second day.

The business sessions of the meeting were marked by strict attention and lively discussion. That there was sufficient food afforded for argument and thought will be appreciated by reading the titles of the papers presented. These were as follows: The Manufacture of Sulphate of Ammonia, by Mr. James Somerville; Ammonia Washer-Scrubbers, by Mr. G. A. Hyde; Gas Fitting, by Mr. George B. Burns; Testing the Value of Coal for Gas Making, and Retort Furnaces (two papers), by Mr. E. McMillin; The Future of Gas and the Gas of the Future, by Mr. Edward Lindsley; Is it Economy for Small Gas Works to Adopt Regenerative Furnaces, by Mr. John Gimper; System—Does Observance of it, in and about a Gas Works, Pay? by Mr. T. A. Bates; Relations of the Sciences of Chemistry and Physics to the Manufacture of Gas for Illuminating Purposes, by Professor S. H. Douglas; Dip Pipes and Benches, (two papers) by Mr. T. G. Lansden; Wooden Pipes for Gas Mains, by Mr. J. G. Miller; The Pelouze and Audouin Condenser, Mr. James R. Smedberg. The papers will all follow in due course of proper order in report of proceedings.

On the night of Thursday, May 15th, an elegant banquet was spread in the dining-room of the Southern Hotel, the *menu* being elaborate and the cooking delicious. About 150 guests assembled to do justice to the occasion; the banqueters were welcomed in an appropriate manner by Mr. J. D. Thompson, of the Laclede Gas Light Company, who filled the responsible post of Chairman of the local committee of arrangements, and had for efficient adjutants Messrs. Socrates Newman, T. G. Russell, James Green, L. J. Howard, L. M. Rumsey, N. O. Nelson, L. B. Ripley, and James Daniels. The greatest possible credit should be given this committee for the admirable manner in which they attended to the duties of the occasion.

The third day, May 16, was taken up in sight seeing; carriages were provided (38 being in line), and visits were made to the works of the Laclede and the St. Louis Gas Light Companies, to the Shickle, Harrison and Howard Iron Works, to the factories of the retort and fire-brick establishments of Parker, Russell & Co., Evens & Howard, and the Laclede Manufacturing Company, winding up at the Fair Grounds, where the excursionists were regaled with an elegant lunch. The hour for saying adieu having arrived, and farewells said, the Seventh Annual Meeting was a "thing of the past" only in so far as the actual business of the session had terminated, for many and pleasant are the remembrances of its excellent results, sure to bring forth better work in many a gas works plant. As to its fraternal courtesies, suitable recognition can hardly be given; but we wish to make hearty acknowledgement of the many obligations under which the JOURNAL's representatives have been placed.

RETAINING THE CARBONIC OXIDE CLAUSE.

The confident boasting of the speculators, who sought to remove from the statute books of the State of Massachusetts a measure originally placed thereon for the better protection of the lives of the inhabitants of that Commonwealth, has been changed to tearful wailing, now and then enlivened by the occasional emission of a howl of agony, the latter cheerful tune being set to the music of "ringing the changes" on charges of corruption. The reason why the boasting has ceased, and the lugubrious period set in, is accounted for because the Massachusetts State Senate, on date of May 15th last, refused to concur in the agreement reached by the lower branch of the legislature whereby it was resolved to repeal that portion of the Massachusetts laws prohibiting the manufacture or distribution, withing the limits of that State, of an illuminating gas containing more than 10 per cent. of carbonic oxide. What makes the defeat all the more galling is the fact that the repeal bill had been ordered to a third reading in the Senate; still, "there's many a slip 'twixt the cup and the lip," and this case happens to be one of the slips. Charges of bribery have been made, and we understand that a committee has been appointed to investigate the matter. We shall detail the whole case when the "evidence is all in."

PERSONAL.—MR. C. V. SMITH.

Mr. C. Vandervoort Smith, Chief Engineer of the Manhattan Gas Light Company, has returned home from his European trip, arriving in New York city on the morning of May 26th, per steamship Aurania, of the Cunard line. Mr. Smith has greatly improved in health, and is now in a fair way of regaining his old-time physical status. That such may be the case is the sincere wish of the writer, and also the fervent hope of the large circle of very warm friends to whom Mr. Smith has endeared himself.

[From the London "Journal of Gas Lighting."]

Coal Gas Versus Water Gas in New York.

There is a sort of triangular duel going on in the State of New York between the water gas interest, the AMERICAN GAS LIGHT JOURNAL and the *Sanitary Engineer*, with the State Board of Health in reserve. It appears that the Assembly of the State of New York, doubtless moved thereto by the Standard Oil Company, requested the State Board of Health to report upon the water gas as now manufactured in New York and Brooklyn, with respect to its influence, if any, upon the health of the community. The inquiry was referred to a sub-committee, consisting of the Board of Chemists—among whom was Dr. E. G. Love, the Gas Examiner of New York city—who appear to have held a meeting on March 12. They state that all the gas companies were invited to appear on this occasion; but that only the water gas interest, who seem to have been prepared with a cut-and-dried statement, put in an appearance. Whereupon the Board of Chemists forthwith drew up and signed a report of three lines, giving it as their opinion that water gas is not more dangerous or "detrimental to health than other illuminating gases." This precious document was adopted by the Board of Health, and sent in to the State Assembly, as embodying the last word on the subject. For sneering at this proceeding as "the veriest sort of farce," the AMERICAN GAS LIGHT JOURNAL is abused by Dr. Love, supported by the *Sanitary Engineer*. It will appear to most people on this side, however, that if the question was worth raising at all, it was certainly worth more respectful consideration at the hands of the chemists than, from Dr. Love's own confession, it received. Experts, and especially chemical experts, are notoriously given to dogmatize upon matters that come within their ken. Without adducing a single argument, or citing any statistics, or naming one experiment, these four chemists undertook to settle off-hand a most important question, which, for chemical reasons alone, has attracted the attention of the great German Chemist Max. von Pettenkofer—a philosopher whose opinion would outweigh that of all the State Chemists in America—and drawn from him a careful detailed report. And it is perfectly certain that to set against these four chemists, or forty more who might take the same side, a similar number could easily be found who, with equal authority, would testify to the direct contrary. It therefore appears that in appending his name to such a futile document the New York City Gas Examiner laid himself open to all the sneers which have so annoyed him. Experts need an occasional reminder that, unless plainly supported by such positive facts as they are supposed to have at command, their opinions are of no more value than those of other people.

[Official Report.]

Seventh Annual Meeting of the Western Gas Association.

Held at the Southern Hotel, St. Louis, Mo., May 14, 15, and 16, 1884.

First Day—Morning Session—May 14.

The Seventh Annual Meeting of the Western Gas Association (President J. B. Howard, of Dubuque, Iowa, in the chair) was called to order at 10 o'clock A.M., on Wednesday, May 14, in the parlors of the Southern Hotel, St. Louis, Mo. In convening the assemblage the President said:

Gentlemen:—I am thankful to meet with you all again at this the Seventh Annual Meeting of the Western Gas Association; but before proceeding any further I would like to make a statement concerning the condition of my health. I wrote Secretary A. W. Littleton a few days ago, stating that I hardly thought it possible I should be able to attend this meeting owing to illness. I received a letter from him in reply, in which he stated that there would be several visitors here from the East; in the expectation of meeting some old acquaintances, and the pleasurable anticipation of forming new friendships, I rallied sufficiently to be with you to-day. At first I hoped that perhaps I would be equal to the task of presiding over the deliberations of the convention; but now feel that I have overestimated my powers of endurance, and shall therefore be obliged to ask your indulgence. I will, however, call the Association to order, and inaugurate the preliminary proceedings. The first business called for is the reading of the minutes of last year's session; if no objection be made, this will be dispensed with as involving an unnecessary consumption of time.

As no objection was made, the reading was dispensed with, and Secretary Littleton then called the

ROLL OF MEMBERS.

A. T. Averill, Cedar Rapids, Iowa.
W. A. Agard, Des Moines, Iowa.
J. S. Ambrose, Springfield, Mo.
G. B. Burns, Bloomington, Ill.
J. W. Butman, Decatur, Ill.
T. A. Bates, Cairo, Ill.
P. T. Burtis, Chicago, Ill.
F. Beck, Galveston, Texas.
A. C. Baxter, Jr., Lima, Ohio.
T. A. Cosgrove, Evanston, Ill.
C. Collins, Murfreesboro, Tenn.
A. D. Cressler, Fort Wayne, Ind.
H. E. Clarke, Kansas City, Mo.
R. H. Canby, Bellefontaine, Ohio.
R. T. Coverdale, Cincinnati, Ohio.
J. Dell, St. Louis, Mo.
G. E. Downing, New York City.
S. H. Douglas, Ann Arbor, Mich.
J. W. Dunbar, New Albany, Ind.
J. H. Decker, Hannibal, Mo.
J. Daniels, St, Louis, Mo.
C. H. Dickey, Baltimore, Md.
J. Fullager, Cincinnati, Ohio.
J. Gimper, Leavenworth, Kansas.
H. T. Gerould, Mendota, Ill.
J. J. Griffin, Philadelphia, Pa.
J. Green, St. Louis, Mo.
L. A. Hall, St. Louis, Mo.
J. B. Howard, Dubuque, Iowa.
G. A. Hyde, Cleveland, Ohio.
L. J. Howard, St. Louis, Mo.
E. T. Howard, St. Louis, Mo.
J. A. Harris, Philadelphia, Pa.
R. C. Humphrey, Ashtabula, Ohio.
W. H. Judge, Rock Island, Ill.
N. W. Jones, Chicago, Ill.
R. C. Johnston, Lawrence, Kansas.
J. O. King, Jacksonville, Ill.
E. J. King, Jacksonville, Ill.
C. M. Keller, Columbus, Ind.
J. L. Kelley, Middletown, Ohio.
T. G. Lansden, St. Louis, Mo.
A. W. Littleton, Quincy, Ill.
E. Lindsley, Cleveland, Ohio.
M. Moran, Joliet, Ill.
J. K. Mitchell, Galesburg, Ill.
J. Montgomery, Sedalia, Mo.
J. G. Miller, Green Bay, Wis.
E. McMillin, Columbus, Ohio.
W. McDonald, Albany, N. Y.
B. W. Perkins, South Bend, Ind.
A. T. Prentice, Chicago, Ill.
W. Parritt, Bloomington, Ill.
G. S. Page, New York, N. Y.
S. Prichitt, Nashville, Tenn.
G. G. Ramsdell, Vincennes, Ind.
T. G. Russell, St. Louis, Mo.
Z. T. F. Runner, Freeport, Ill.
H. Ranshaw, Cincinnati, Ohio.
D. R. Russell, St. Louis, Mo.
J. M. Starr, Richmond, Ind.
T. Smith, Grand Rapids, Mich.
J. Somerville, Indianapolis, Ind.
R. Spencer, Burlington, Iowa.
J. Stout, Chicago, Ill.
H. H. Sheldon, Providence, R. I.
W. Stacey, Cincinnati, Ohio.
L. K. Scofield, Fort Scott, Kansas.
J. B. Smallwood, Baltimore, Md.
W. Sumner, Des Moines, Iowa.
J. R. Smedberg, Lancaster, Pa.
M. H. Thompson, Elgin, Ill.
J. H. Walker, St. Louis, Mo.
W. Wallace, Lafayette, Ind.
S. Watts, St. Louis, Mo.
G. H. Tayler, Warren, Ohio.
H. D. Wood, St. Louis, Mo.
J. H. Woodmansee, Danville, Ill.
M. N. Diall, Terre Haute, Ind.

COMMITTEE ON INTRODUCTION.

The President—We have quite a number of distinguished visitors with us who have journeyed here from the far East. In order that the Association may know who these gentlemen are, I will appoint, as a committee to introduce them, Messrs. T. G. Lansden, T. A. Cosgrove, and E. J. King. I hope the committee will attend to its duties with all possible haste, as we shall anxiously await the report.

The President then read the following

INAUGURAL ADDRESS.

Members of the Western Gas Association—Gentlemen: A year ago, when delivering my opening address at the Cincinnati meeting, I had not the most remote idea that I should again be called upon to occupy the proud position of President of this organization; but you have willed it. I trust, however, I am not so egotistical as not to be fully aware that very many of those whom I now address are not only much better posted in gas matters than I am, but would make very much abler presiding officers; and this knowledge leads me to thank you all the more profoundly, and makes me feel much more sensitively the high honor you have conferred upon me in twice selecting me as your official head.

I can again grasp you warmly by the hand in happy congratulation that the muster roll of the Western Gas Association is still a unit, and though some, from unavoidable causes, may be absent from this meeting, they are no doubt with us in spirit, and feel unabated interest in our deliberations and success. But while our own ranks are still unbroken, we are called upon to mourn over the loss of two eminent members of a sister organization, who during the last year have passed away. I refer to Mr. William H. Price, of Cleveland, Ohio, and Major G. Warren Dresser, of New York.

Mr. Price was one of the founders of the American Gas Light Association, and for two terms filled the Presidential chair of that body. Always active in its behalf, he did much to secure its success. He was a frequent attendant at our meetings, evincing a deep interest in the proceedings; and while we mourn in him the loss of a genial, friendly spirit, whose counsel was ever ready, and carried with it great weight and consideration, we also cherish in his memory the rare qualities of a finished scholar, a clear logician, an eloquent and forcible speaker, and a fluent writer. His exertions on behalf of advancing the common interests of our fraternity can only be fully realized as his absence makes itself felt, and but more clearly imprint on our memories the almost irreparable loss we have suffered through his departure from our midst.

Major Dresser was the Editor of the American Gas Light Journal, and, like Mr. Price, was earnest and indefatigable in his efforts to promote and advance the gas interests of the country. It would be superfluous for me to attempt a recital of the influence he exerted in his professional capacity. He was at all times ready and willing to aid us in solving any entangling or difficult problem that might present itself in the minutia of gas making and distribution. You have, no doubt, all been benefited by drinking in knowledge spread from the point of his clear, sagacious pen. His eminence is fully attested by the fact that he was elected an honorary member of the British Gas Institute, and also of the French Association of Gas Engineers; and the resolutions of respect passed by those organizations, at his death, show that his loss was as keenly felt, and his high order of talent as fully appreciated, on the other side of the Atlantic as in our own country. But while the gas world pays willing tribute to him as a man of recognized ability in the gas profession, the memory of his brilliant services to his country must not be forgotten. He was a regularly commissioned officer in the army during the late war, where his high order of engineering skill, coupled with undaunted bravery, lent much to the success of the various campaigns in which he was engaged.

The steady growth of membership and of attendance at these, our annual meetings, and the increased interest manifested in them, must be a source of gratification to us all. At our last meeting, in Cincinnati, Ohio, you listened to some very able and interesting papers, prepared by various members of our society; and, during the present session, you will also have the pleasure of hearing some practical points discussed. Some of the gentlemen who have kindly consented to favor us with papers at this meeting also contributed at the last one, and I feel constrained to extend to them my personal thanks for their great kindness in consenting to so do, as I am sure you will all admit that these papers, and the discussions arising from them, are not only interesting but very instructive. Many of those present are new members, some of whom may be managers of small works, and but young in the gas business. To such I would say that many difficulties may present themselves which to the beginner look very harassing, and might, indeed, seem almost insurmountable. Still these troubles will, in all probability, be but those which have been met and overcome by their older brethren years ago; and one of the prime objects of this Association is to give to all its members the benefit of mutual experience, which I hope will be freely called for, as I am sure such experience will be freely imparted.

In regard to the present condition of our industry, I think I am safe in saying that it is prosperous, and that nothing has presented itself during the past year which promises in the least to usurp the sway so long held by coal gas as an illuminant, while inventors are active in discovering new fields in which its use may be cultivated.

Our business (to which is often applied the epithet monopoly) has many difficulties to contend with. The public are slow to learn that we do, or can, occupy any other position towards them than that of any ordinary competitive industry; and they seem to imagine that the only way to regulate the price of gas is to open up its field to the same kind of free competition to which general trade is subjected. In pursuance of this idea charters are often granted to whoever may apply for them, provided the applicants come with a glittering placard of promises to cheapen the price. It may be they herald as a plea (which is frequently the case) some new and startling discovery destined to revolutionize the art of gas making. As a rule these men are shrewd schemers, and play upon the credulity, or venality, of the municipal council they come before. These councilmen, who may be intelligent and fair minded enough in other matters, are almost in every case ignorant of the principles of gas manufacture, and, as a result, the applicants are often granted charters, despite the fact that the existing company has a works amply able to supply the city and its inhabitants with the needed gas product. As under such conditions there can be no possible economic utility for two companies, the matter always ends in one of the three following results, none of which work to any good end for the public, but, on the contrary, invariably tend to operate in the contrary direction: First, The new company sells out its charter to the old one for a handsome pecuniary consideration; Second, The two companies enter upon a war of prices. For a brief period, the public reaps the benefit of the temporary competition, but finally one buys out the other, and up goes the price; Third, The two companies combine, district the city, and agree upon prices. Now, it is plain that where more than the necessary money is invested to produce a given make of gas, some one must suffer from the waste of capital, either the company or the public; and here we come to the equity of the case. I have stated that the public invariably places us on the same footing as any ordinary business enterprise, seeking to regulate our prices by the same laws; and, as I take it, here is where the public errs. The question of regulating monopolies is one which, at the present day, is coming very prominently before the country. Every business that is operating under a special charter, or grant, is called a monopoly, and the owners of such grants are supposed to be making large fortunes; and it would seem needless to add that the truth of such an assertion does not of necessity follow its utterance.

The problem which is now anxiously being inquired into, with a view to seeking its true solution, is whether a business in which the price charged is not controlled by competition can be equitably regulated by legal enactments; and, if so, what general form are these enactments to assume? for, I opine, if a broad principle can be devised, it will apply in large measure to all.

President Forstall, in his address before the American Gas Light Association last October, treated this subject, so far as it applied to gas companies, very ably and fully. He showed quite conclusively that where two or more companies were doing the business which could be as well done by one, the public was always the sufferer; and gave many examples in proof of the truth of his statement. As a solution of the troubles he pointed to English legislation, citing, as an example, the City of London, where Parliament fixed the prices on the basis of a 10 per cent. dividend, while, at the same time, competition was forbidden. Still, on mature reflection, we might inquire whether the conditions in this country are such that similar laws could be as successfully applied here.

The English Parliament is supreme throughout the British Islands; but in our country it would not be within the province of our National Congress to enact such measures, and whether this question could be settled by State or municipal legislation is a point to consider. Conditions in this country are not as settled as they are in England; they are constantly changing, and such price as might be considered just this year would not be so considered the next, with the inevitable tendency that such varied annual phases would lead to constant tinkering.

I believe, as I have heretofore stated, that the true solution will be found in some broad principle, the operation of which may happily be in some manner self regulating—for, as everyone knows who is at all acquainted with our politics—or, rather, our politicians—the less we leave for it, or them, to do, the better off do we find ourselves. This question, however, trenches upon a broad principle of political economy, which I am not egotistical enough to suppose I can fully grapple with. I do not, however, think the difficulties are by any means insurmountable. A solution will no doubt sooner or later be brought about; I am sure the gas industry of the country will hail the solution with joy as giving permanency and stability to our investments, while disabusing the public mind of the idea that our profits are fabulous when they are only legitimate.

In addressing you as President of this Association I do not deem it to be my province to enter into any of the details connected with the practical workings of our profession, but only to hastily scan the whole broad field. Papers, however, have been prepared on various subjects, by several of our brother members, which I have no doubt, will be very instructive, and call up interesting and useful discussion. In these latter days the press has been a wonderful aid to us in disseminating the thoughts of others. Our very ably conducted paper, the American Gas Light Journal, comes to us semi-monthly loaded with everything new in the gas world. In the interim between our annual meetings this Journal is a freely proffered medium through which we may ask questions and give answers. It publishes the doings of the various gas associations not only in this country but in Europe; and I think I may safely say that it has contributed, in no small degree, to the promulgation of a large amount of knowledge; and, further, has done much to enlighten and educate our engineers in their profession.

Among the many subjects that have attracted the attention of inventors these latter years none other has commanded a greater amount of thought than that subtle fluid, electricity. Fears were at one time entertained that it would displace coal gas as an illuminant, and gas stocks, more especially the European shares, trembled in the waves of uncertain, storm-tossed financial seas; but later developments conclusively prove that gas still holds the field.

Since our last meeting nothing has come up to alter the opinion I then expressed of the supremacy of gas in the sphere of artificial illumination; but, on the contrary, every later development has tended to strengthen that opinion more fully.

This is a wide-awake age, and one of intense rivalry. Ten thousand minds are grappling with a thousand problems in the effort to dazzle the world with new discoveries, or to simplify and cheapen the old. It is an age of invention; new ideas are flashed upon the world with lightning-like rapidity; new theories and new utilities are rapidly thrust upon us with Eureka labeled upon them; but how few are destined to live and receive the homage of the world for making it happier and better. If I might be permitted to use a simile—look at the world of literature. What a mass is annually thrown before us to pass upon; every succeeding year adds more and more, each author feeling sanguine he has "ensured his debtors for all future ages."

Let us travel backward through the decades—back, if you will, through the centuries—and could you call up from the oblivion of the past the writings of thousands and tens of thousands, whose authors thought they had immortalized themselves, what an innumerable mass of volumes would be presented—sad monuments of broken hopes, of blighted ambitions, of wasted time. Pass, then, from this gloomy picture to the living gems, the sparkling diamonds of literature, bright legacies of immortal names, not doomed to die; gems that have stood the winter blast, the summer sun, and carping critics venomed tongues. How few they are, how very few; they are not of an age, but for all time. So it is with the arts; new ideas roll in upon us wave after wave, but, alas, how few are destined to live. They come, it may be, heralded with a flourish of trumpets; perhaps they dazzle and bewilder, then pass like the dissolving views of a panorama to be seen no more. How few there are that live? I say few, by comparison; they are buried with the forgotten books.

Coal gas stands upon the throne of standard utilities; a hundred rivals have tried to supplant it; but still it is "king."

When the Chairman had finished the reading, Mr. Cosgrove moved that a vote of thanks be tendered President Howard for his address. The motion was put to a vote by Vice-President Lansden, and it was declared carried.

REPORT OF COMMITTEE ON INTRODUCTION.

Mr. Lansden, from the Committee on Introduction, then announced that he had ascertained the presence of the following visitors, and read the names of Messrs. Joseph R. Thomas, Editor American Gas Light Journal; A. B. Slater, of Providence, R. I.; John P. Harbison, Hartford, Conn.; John Andrew, Chelsea, Mass.; and Fred. J. Davis, Waltham, Mass. Mr. Lansden said he thought that there were also some other visitors present, and hoped that if such were the case they would make their presence known to the Association.

The President—I need not say that it gives us all great pleasure to receive the gentlemen whose names have just been reported by the Committee as a visiting delegation of our brotherhood from the eastern section of the country.

The visitors were then called to the platform, and each in turn was formally presented to the convention. Much laughter and applause followed the various responses given during the introductory ceremony, which were generally rendered in a jocose vein.

At this point President Howard claimed the indulgence of the members and visitors, and asked to be excused from his official duties in connection with the convention on account of inability to physically stand the strain any longer. He called Vice-President T. G. Lansden to the chair, who, on

assuming the gavel, said, "Gentlemen, this is quite unexpected to me, and I feel that you will all grieve with me on account of the illness which obliges our President to retire from his official duties. I shall rely upon your forbearance while presiding over your deliberations. The next business in order is the election of new members."

The Secretary then read the following list of

APPLICANTS FOR MEMBERSHIP.

A. Haselmeyer, Springfield, Ill.	W. E. Bellmer, Carlinville, Ill.
R. B. Dickey, Lexington, Mo.	B. E. Chollar, Topeka, Kansas.
J. Gardner, Pittsburgh, Pa.	F. Egner, St. Louis, Mo.
J. M. Davidson, Marshall, Mo.	R. D. Wirt, Independence, Mo.
G. T. Murdock, Elkhart, Ind.	R. W. Kelly, Atchison, Kansas.
E. W. Morse, Fort Scott, Kansas.	D. T. Roots, Connersville, Ind.
S. M. Highlands, Muncie, Ind.	W. C. Ritchie, St. Louis, Mo.
S. L. Jones, Philadelphia, Pa.	E. H. B. Twining, Chicago, Ill.
T. Wood, Sandusky, Ohio.	V. L. Elbert, Jackson, Mich.
F. H. Stanberg, Pekin, Ill.	C. H. Nash, St. Joseph, Mo.
S. V. Merrick, Philadelphia, Pa.	T. E. Taylor, St. Louis, Mo.
W. W. Goodwin, Philadelphia, Pa.	J. McIlhenny, Philadelphia, Pa.
C. D. Hank, Springfield, Ohio.	C. S. Knight, Fort Wayne, Ind.
L. M. Potter, Springfield, Ohio.	C. Shreve, Sioux City, Iowa.
W. H. Morgans, Pontiac, Mich.	J. H. Johnson, St. Louis, Mo.
J. B. Quigley, Atchison, Kansas.	W. H. Odiorne, Springfield, Ill.
C. H. Welch, Athens, Ohio.	W. H. Down, New York, N. Y.
M. J. Payne, Kansas City, Mo.	O. D. Delano, St. Louis, Mo.

Vice-President Lansden then appointed Messrs. L. K. Scofield, W. Wallace, and G. B. Burns as a committee to consider and report upon the eligibility of the gentlemen named as candidates for membership.

The committee subsequently reported favorably on all the names presented, recommending them as proper persons to be placed upon the rolls. Mr. King thereupon moved that Secretary Littleton be instructed to cast the vote of the Association for the gentlemen proposed. No objection being interposed, this course was followed, and the Secretary announced that he had done as directed.

The Vice-President then announced that the next thing on the programme would be the reading of a paper by Mr. James Somerville, of Indianapolis, Ind., on the subject of

THE MANUFACTURE OF SULPHATE OF AMMONIA.

A little more than a year ago the company with which I am connected decided to work up the ammoniacal liquor into sulphate of ammonia. We had, from time to time, received from various parties propositions agreeing to take the liquor of a certain strength for a term of years; but the amount offered per ton of coal carbonized was not, in our opinion, sufficient to justify us in going to the expense of putting up the necessary apparatus and storage tanks to make the liquor available and of the required strength. We therefore concluded that it would be preferable to manufacture the sulphate instead of selling the liquor.

I had absolutely nothing in the works whereby I could utilize or store the ammoniacal liquor; so that all the necessary apparatus and storage tanks had to be made and erected. The storage tank for ammoniacal liquor is 16 feet in diameter and 5 feet deep; holds 7,000 gallons, and is built as close to the other tanks as possible. I intended to have a larger tank, but found it impracticable, as, at a depth of 5 feet, I struck a running quicksand, and was afraid to pump lest I undermined the other tanks. For this reason I laid down some oak planking, and built the tank upon it. I am glad to say that it has proven a perfectly tight job.

Close to this tank are two smaller tanks or cisterns, each having a capacity of about 60 barrels. These I had also to make water tight; for it is of importance that every precaution be taken that no ammonia be lost through leakage.

We have, then, three tanks, of which No. 1 receives all the tar and liquor from hydraulic main, scrubber, and condensers. It overflows into No. 2, which I call the "settling tank," as any tar that may overflow, from its specific gravity, falls to the bottom, while the liquor remains on top to find its way into No. 3, which receives only the liquor.

The pump is connected to this latter tank, and the liquor is pumped into the ammonia scrubber, from which it flows again into No. 3 tank only, and is pumped in this manner constantly. There is no tar in No. 3 tank. Before the gas reaches the ammonia scrubber it passes through a Pelouze and Audouin condenser, which allows no tar to pass it. This is of importance, because it would be almost impossible to make white sulphate with tar in the liquor; and the ammonia scrubber will not do the work properly of absorbing the ammonia if tar is permitted to get into it.

As the making of sulphate of ammonia was somewhat of the nature of an experiment with us, we thought it best to erect a cheap form of scrubber, which is $8' \times 4' \times 45'$ in height, and is made of boiler iron, with a gas-tight division in the center, forming two compartments $4' \times 4' \times 45'$. It is filled with 1-inch boards, laid flat, which are 4 inches wide, and placed an inch apart, resting on 1-inch strips, and have a number of ¼-inch holes bored through them for the purpose of increasing the surface.

The gas enters the bottom of the scrubber, rises in a zig-zag course, and meets in its passage the descending liquor, which flows down this division. It then passes over the top into the second division, where it meets a stream of clean water, and is freed from its remaining ammonia, then going on to the purifiers. At the outlet of the scrubber the gas will hardly color litmus paper, and the actual quantity of ammonia in it is .7 grain per 100 cubic feet. The amount of clean water used is at the rate of 60 gallons per ton of coal carbonized, and the strength of the liquor is about 6 ounces.

For reasons already mentioned I was led to erect what may now be called a primitive form of sulphate apparatus. An unoccupied old building, standing near the works, was used as a factory, the cellar of which is some 5 feet below the railroad track. In it I built two acid tanks, each $8' \times 5' \times 12'$, made of wood, bolted well together, and lined with sheet lead, 4 pounds to the square foot. These tanks will hold two cars of acid. Connected with them is a 2½-inch lead pipe, which extends to a point near the railroad tracks. As the acid is shipped in tank cars, all I have to do is to make connection with the pipe, and the tanks in the cellar are filled by gravitation. The acid is brown sulphuric acid, 60° Beaume, specific gravity 1.740.

The boiler, which is set in the usual manner, is 5 feet in diameter and 20 feet in length. In setting it, I constructed flues in the wall, which terminate under the grate bars, and whose purpose is to carry off and burn the CO_2 and SH_2 that arise during the process of distillation. Placed near to the boiler is the saturator, which is $2' \times 4' \times 6'$, made of wood, and lined, with sheet lead, 12 pounds to the foot. In case this should give out, we have an extra one ready for use. The saturator is connected to the boiler with a 2-inch wrought iron pipe, on the end of which is a lead arm, or "tee," pierced with a number of holes to allow the ammonia free exit into the acid contained in the saturator. The top of this vessel, with the exception of a portion, is moveable, to which portion is attached a wooden flue, $12'' \times 12''$, which is carried over head, and connected to the flues—already alluded to—in boiler setting. The saturator is provided with a wooden table, $1\frac{1}{2}' \times 3' \times 6'$, the bottom of which inclines to the saturator so that the drip, or pickle, as it is called, coming from the wet sulphate, runs into the saturator.

After the sulphate has remained on the dripping table for a few hours it is removed to the bins. These are four in number, and each will hold four tons. They are lined on the bottom with lead, four pounds to the foot, and each has a false bottom, on which the sulphate rests, and from which the drip runs into a gutter, also lined with lead. When full this is emptied into the saturator. Above the boiler, on the second story of the building, is a wooden tank, $4' \times 4' \times 3'$, for mixing the lime. A little below this box, and connected to it by a 2-inch pipe, is an iron drum, 4 feet both in diameter and length. This drum is connected with the steam boiler of the works by a ¼-inch pipe screwed into the top.

The operation of making sulphate is as follows: The boiler is filled to the middle cock with ammoniacal liquor, from tank No. 3, by the same pump that supplies the scrubber, and a fire is started under it. In about an hour steam ammonia, sulphuretted hydrogen, and carbonic acid, begin to come over into the saturator, which is half filled with acid and water. The ammonia is arrested by the acid, and formed into sulphate, (I have some of it here for inspection) while the CO_2 and SH_2 pass through the flues, and are burnt under the boiler.

During the operation there is no disagreeable odor whatever. It takes about ten hours to distill a charge, fresh acid being put into the saturator as it is required. A piece of litmus paper held over the steam shows immediately whether any ammonia is escaping.

About two hours before the end of the charge, 100 pounds of lime are prepared in the lime box. When well-mixed, it is run into the drum. Above it steam is then admitted, the pressure of which forces it into the boiler, where it is agitated by a steam pipe connected to the works boiler. This pipe lies upon the bottom of the boiler, and is perforated for the exit of the steam. Any fixed ammonia is, by the action of the lime, broken up, and passes into the saturator. When the ammonia is all driven off, which is indicated by the test paper, the water is withdrawn and a fresh charge pumped in. While this is in progress, the attendant is emptying the saturator of its sulphate, and putting it on the dripping table.

We run off a charge every day, except Sunday, and during the winter months, three and sometimes four nights per week. The amount of sulphate made, per ton of coal carbonized, is 22½ pounds. It has averaged 25 per cent. of ammonia.

In connection with the sulphate apparatus, we also put up an apparatus for the manufacture of aqua ammonia, but have not yet used it much. The cost of the whole was $3,000. As the aqua apparatus cost about one-half of this amount, we may conclude that a very complete sulphate of ammonia plant can be erected for $1,500, handling a make of gas of 150,000,000 cubic feet per annum.

The expense of erecting the ammonia scrubber complete, with all connections, was $2,000; but the saving of lime through its use has been so great that I consider it a sound investment. I find that for eight months previous to the erection of the scrubber, we purified 16,428 cubic feet of gas per bushel of lime, and, for eight months after its erection, we purified 18,303 cubic feet per bushel, an increase of 1,875 cubic feet per bushel. This represents a saving of $175 per annum.

The cost of making a pound of sulphate I find to be as follows:

Labor	.45 cents.
Fuel	.31 "
Acid	.50 "
Sundries	.24 "
Total	1.5 cents.

Through the extraordinary decline in the price of sulphate, the results have not been so satisfactory as we anticipated; yet we have no cause to regret that we erected the works. For we have the satisfaction of utilizing a substance which formerly ran to waste; and, what is of equal importance, we are enabled to give steady employment to one or more additional men.

Discussion.

The Vice-President, in inviting discussion on Mr. Somerville's paper, hoped that the Association would hear from everyone present that was at all interested in the topic.

Mr. McMillin—I have taken much interest in the paper read, as I have been figuring on the cost of constructing an ammonia plant at Columbus, Ohio; and, as yet have been unable to obtain definite information on the subject. I would like to ask Mr. Somerville what weight of sulphate of ammonia he got from a ton of coal?

Mr. Somerville—22½ pounds to the ton.

Mr. McMillin—Did you run continuously in your working, or were you able to keep your men at work constantly?

Mr. Somerville—We worked somewhat irregularly, varying with the seasons of the year, and, as a consequence, our men were not steadily employed.

Professor Douglas—I would like to ask Mr. Somerville if he used the wash-water for re-washing a second and third time to strengthen the ammonia solution.

Mr. Somerville—Yes.

Professor Douglas—You pumped it back, and ran it through the washer?

Mr. Somerville—Yes; keeping it at a certain strength.

Professor Douglas—I would like to learn Mr. Somerville's experience in the use of water the second time for strenthening the solution; whether it extracts, the second time, more of the sulphuretted hydrogen than it did the first time—in short, whether it improves by use.

Mr. Somerville—It undoubtedly improves by use.

Professor Douglas—In what way do you explain that phenomenon? What is the chemical change involved that thus adds to its value?

Mr. Somerville—The only explanation that I can give is that the more fixed ammonia the water takes up from the gas, the more carbonic acid and sulphuretted hydrogen it will extract. For instance, if I were using pure water, it might take out some of the ammonia, but only a small percentage of the other impurities. The more I strengthen the liquor, by re-washing, and bring the crude gas in contact with the salts of ammonia in the scrubber, the better results I get in cleansing the gas from sulphuretted hydrogen and carbonic acid. The purifiers lasted, after starting the scrubber, perhaps a week longer if I kept the temperature down. If the temperature of the liquor in the scrubber rises to 85° or 90° it seems to lose its power. I think exposure to such degrees of temperature volatilizes the ammonia thus impoverishing the liquor; and it seems to me that the best results are obtained when the liquor is kept at a temperature of about 70°.

Professor Douglass—It strikes me the explanation of this phenomenon (which certainly is a very singular one) is that the ammonia unites with hydro-sulphuric acid to form a compound with sulphide of ammonia, and it acts by extracting the sulphuric acid through the formation of this other compound. It is well to keep this in view, because it may possibly thus be explained why the re-use of ammonia water is so efficient in removing hydro-sulphuric acid. I asked the question hoping that Mr. Somerville had examined into the matter.

Mr. McMillin—I would ask Mr. Somerville if it is not possible that he would derive more benefit if he were able to utilize whatever free ammonia was present—and that there would be absolutely no virtue in the salts of ammonia.

Mr. Somerville—I do not believe that free ammonia has any effect whatever in taking up the carbonic acid and sulphuretted hydrogen impurities. If the ammonia in the liquor is in the form of a sulphide (as Professor Douglas says) then it may act upon these impurities, but free ammonia will not do it. When the liquor is strengthened by taking up the ammonia in the form of salts then it acts as a purifier.

Mr. Fullager—What did you state was the stength of your liquor?

Mr. Somerville—Six ounces.

Mr. Fullager—When it goes above 6 ounces, do you find it still takes o impurities.

Mr. Somerville—Certainly.

Mr. Fullager—I found in my scrubbers, that when we got over 8 ounce the liquor would cease to act as a remover of sulphuretted hydrogen a carbonic acid.

Mr. Somerville—I think it is a mistake to suppose that you can strengthe liquor up to 12 ounces, and then expect it to still take out the impuriti mentioned.

Mr. Fullager—I found that to be so. The reason I asked the questio was because there appeared to me to be an impression that you cou strengthen the liquor up to even 15 ounces, and yet take out those impur ties with it.

Professor Douglas—My explanation in regard to the hydro-sulphuric ac is based, not from experience gained in the manufacture of gas, but from th manfacture of a chemical reagent. Sulphide of ammonia is largely used a chemical reagent, produced simply by passing gaseous hydro-sulphur acid through ammonia water. Now, precisely the same reaction takes pla as was described—with, however, the formation of sulphide of ammonia; an the explanation why this liquor cannot be strengthened beyond a certai point, without impairing its efficiency as a remover of certain impuritie seems to me very simple. When the ammonia is saturated with hydro-su phuric acid or sulphur its limit of capacity is reached, and that is the end o its power as an absorbent. Hence there is a limit at which you can use again.

Mr. McMillin—I have scarcely a doubt that it would be a physical, or last a chemical, impossibility for either sulphate of ammonia or carbonate ammonia to altogether remove the carbonic acid. They have been saturated and that is the end of it. By using water over and over again you may ac complish something, provided there be some free ammonia still present, an when you have your liquor at 6 ounces, you may say you can use it over get it up to 8 ounces and still have it effective. That might all be, but thi advantage is not to be traced to salts of ammonia. You cannot eat your cak and have it, nor can you use your ammonia once and have it again.

Mr. Starr—I should like to enquire from Mr. Somerville the result of hi experience as to profit. Taking the interest on plant and the cost of mak ing sulphate of ammonia do you find the course taken a profitable one Parties having made proposals to me looking to the erection of a sulphat plant in my city, naturally, I would like to learn, from those having had ex perience in the matter, what per cent. of profit there is in the business o sulphate making for a gas works of the size of those at Richmond, Ind.

Mr. Somerville—Judging from my experience, I do not think I would ad vise Mr. Starr to go into the manufacture of sulphate at the present price which that product sells for. The price now is ruling very low. I shoul put my profit down at about 20 cents per ton of coal carbonized, this figur including interest on plant and every other item of expense entering int the matter.

The Vice-President—As this is a question that very few of our member have had any experience in, we would be more than pleased to hear fro all those who have the knowledge which we do not possess. Mr. G. A Hyde, of Cleveland, Ohio, I think has been experimenting in this direction and I shall ask him for his views on the subject.

Mr. Hyde—I have prepared a short paper on the subject of ammoni washer-scrubbers, and it seems to me, if the Chairman and the member coincide with the idea, that now would probably be a good time to presen and read it, as the ensuing discussion might be profitably carried on in con junction with whatever further remarks may be made in respect to Mr Somerville's paper.

The Chairman and the Association concurring in belief with the gentle man from Cleveland, Mr. Hyde, without further preface, read his paper entitled

AMMONIA WASHER-SCRUBBERS.

Gentlemen:—At our meeting held at Cincinnati, Ohio, one year ago, in paper I then read on the "Construction and Management of Gas Works," said, in reference to the removal of ammonia from the gas, that "there ar a number of patented methods of performing the work effectively; but, i the absence of any patent machine, two scrubbers 30 to 35 feet in height woul be found reasonably efficient." At that time scrubbers of about that height were in use at the works of the Cleveland Gas Light and Coke Company but, having made no quantitative test, I was unable to give accurate data as to the practical efficiency of their working. Recently, however, two very careful and accurate tests were made by Prof. E. W. Morley, Professor o Chemistry in Adelbert College, at Cleveland, Ohio, to determine the amoun of ammonia remaining in the gas after passing these scrubbers.

The method of determination was the passing of a small stream of ga through a glass tube containing dilute sulphuric acid, until the acid wa

partly neutralized by the ammonia, and then neutralizing the remainder of the acid with caustic soda.

The first tests were made on dates of March 29th and 30th, passing gas at the rate of one-half a cubic foot per hour, passing 8.45 cubic feet, and obtaining 1.23 grains of anhydrous ammonia, being .146 of a grain per cubic foot of gas.

The second test was made on dates of March 31st and April 1st, 2d, and 3d, passing gas at the same rate as in the first test, passing 15.14 cubic feet, and obtaining 2.277 grains of anhydrous ammonia, being .153 of grain per cubic foot of gas.

The average of these two tests is .150 of a grain of anhydrous ammonia per one cubic foot of gas. Now, assuming 5 cubic feet of gas as the product of one pound of coal, or 11,200 cubic feet the product of a ton of coal of 2,240 pounds, then 1,680 grains of anhydrous ammonia are lost for each ton of coal carbonized, corresponding to 6,424 grains, or 14.7 ounces, of sulphate of ammonia.

I understand that it costs about 1¼ cents to manufacture one pound of sulphate, and that its present value is about 2¾ cents per pound; then the loss is about 1½ cents per ton of coal carbonized.

The scrubbers of which I have spoken cost about $1,000 each, with connecting pipes and valves, set up and ready for use. It costs about $25 per year to clean out the fouled brush and relay the new. It costs about $75 per year to pump up the ammonia water from the tar-well to the tank supplying the ammonia scrubber.

There is usualty condensed from gas about 15 gallons of ammoniacal water per ton of coal carbonized. In addition to this amount we use about 20 gallons of fresh water, making a total of 35 gallons of liquor, of a st ength varying from 8 to 10 ounces.

The foregoing is presented for your consideration, and I trust may prove of some benefit.

[To be Continued.]

Special English Correspondence.

Communicated by Norton H. Humphrys.

London, May 10, 1884.

The subject of coal gas was rather prominent at the meeting of the London Section of the Society of Chemical Industry, which was held on the 5th inst. The business comprised the reading of a paper, "On the Composition and Illuminating Power of Coal Gas," by Dr. Percy Frankland; and one "On the Estimation of the Illuminating Power of Gas Burners," by Mr. W. J. Dibdin, the chief gas examiner to the city of London. Looking round on the diagrams illustrating the composition of gas, the various gas burners, and photometrical apparatus, one was reminded of the chemical lectures that used to form a prominent feature of the meetings of the British Association of Gas Managers. The programme was one that should have called together a large audience of gas engineers, and no doubt a good number would have been present at the meeting had its subjects been more generally known. There was a taint "o' profound" science about the proceedings, as looked upon from a practical point of view; but yet some important practical hints were obtainable. Amongst these may be specially named the effect of the incombustible diluents such as nitrogen, air, carbonic acid, and watery vapor, upon the illuminating power of gas. One learned Professor made a few remarks of "the indignant gas consumer" character, and adverted on the bad quality of the London gas; which was rather rude, seeing that the gentleman who certifies officially that it is always up to the standards of illuminating power and purity, took a prominent part in the proceedings. With this trifling exception the subjects were discussed entirely on scientific grounds. As the proceedings are of general interest to the profession, I daresay that the readers of the American Gas Light Journal will have an opportunity of seeing a full report in due course; and would commend it to their careful reading, marking, and inward digestion.

Judging from its comparative immunity from accidents, a gas works is a tolerably safe place. And it is satisfactory—remembering that the number of authorized gas undertakings in the United Kingdom figures out to over 1,000, which may be taken as referring only to gas works making more than 10,000,000 or 12,000,000 cubic feet per annum—to know that an accident on a gas works is a rare occurrence. Taking into consideration the nature of the operations carried on, the infrequency of casualty reflects some degree of credit upon those who have the supervision of the numerous "hands" employed. That "accidents will happen in the best regulated families," however, is illustrated by the occurrence of such an event at the gas works belonging to the Dukinfield and Denton Local Boards, on the 19th ult., and, unfortunately, attended with fatal consequences. Two men were deputed to disconnect a tar pipe from an hydraulic main of the usual kind, on the top of a bench of double retorts in the retort house, the object in view being the insertion in the joint of a sheet-iron plate, for the purpose of raising the level of the liquid contents of the hydraulic. While so engaged, an explosio occurred which threw both men off the stack; one fell on the flags below, and was killed, while the other, falling upon a heap of coke, escaped with injuries of a comparatively trifling character. The hydraulic in question was full of gas, at the time, although the retorts in the vicinity were not at work, though heated ready for use, there being no means of shutting it off from the other part of the house; and from the evidence given by Mr. Harrison Veevers, the manager, at the inquest, the most feasible explanation of the event was that the gas found its way, perhaps, down a "short" dip pipe, into one of the red-hot retorts, and thus led to the explosion, the principal effects of which occurred at the open tar pipe. There was no light on the top of the stack, and Mr. Veevers expressed the opinion that the explosion was entirely distinct from the operations of the two men, and would have occurred if they had not been there. The coroner and jury were satisfied that there had been no negligence, and returned a verdict of "accidental death," without calling for further professional evidence. This accident furnishes an additional argument in favor of the system of a separate hydraulic to each bench, which is now being generally adopted for other reasons. If this system had been in use at the Denton gas works, the accident would not have happened,

Your readers are perhaps aware that, in England, we are running rather rampant upon the subject of gaseous fuel. Amongst other points, the question of distributing it in the same way as coal gas is distributed, has been discussed; and the possibility of carrying out this idea in practice is about to be put to the test at Bradford, Yorks, under the superintendence of Mr. Townsend, the manager of the gas works. After giving a considerable amount of attention to the subject of heating gas, this gentleman has decided to manufacture such in sufficient quantity, not only for the supply of his own retort furnaces, but also for the boilers of some neighboring factories. Mr. Townsend claims—*vide* his letter published in the *Journal of Gas Lighting*—"to have devised a process that will furnish a non-illuminating gas very nearly as powerful (in heating power) as coal gas; as palpable to the sense of smell, containing not much more than twice as much carbonic oxide as is present in ordinary coal gas, and which could be sold in most manufacturing towns at 6d. (12 cents) per 1,000 cubic feet, and yet yield an immense profit." Mr. Townsend is to be commended for his enterprise, for if heating gas can be distributed, there are many reasons why the proprietors of existing coal gas works are in a position to carry out such a proceeding to the best advantage of all concerned. The results of his practical experiment will be eagerly looked for, and we may express a friendly hope that he will be able to realize his expectations.

Talking of fuel gas, those of your readers who are looking up information on this subject will derive some help from a perusal of a paper by Dr. Bunte, of Munich, read at the last meeting of the German Association of Gas and Water Engineers. It has been translated into English, and published in some of our technical papers.

Mr. R. P. Spice, M. Inst. C. E., has made an important communication to the *Journal of Gas Lighting* on the subject of the results gained at Tunbridge Wells Gas Works, by a practical trial, extending over several months, of "Cooper's coal liming process." I have referred to this process in a previous letter (*ante* p. 158). The results are deemed so satisfactory as to warrant a permanent adoption of the process at those works. The advantages gained by its use, according to the experiments of Mr. Spice, are, first, a large reduction in the sulphur compounds; second, a considerable saving in the cost of purification; third, thirty per cent. more ammoniacal liquor without any diminution in the strength; fourth, about 1 per cent. more tar. The quality and quantity of the gas remain about the same. As regards the saving in purification, a considerable measure of this is evidently due to the adoption of a "wrinkle" that is not a feature of this process—the admission into first purifier of a small but carefully regulated quantity of air. This secures a continuous revivification of the oxide while *in situ* in the purifiers, and thus enables the purifiers to be used without changing for a considerable period, as compared with ordinary methods of procedure. Mr. Spice does not appear to have been troubled with any of the difficulties that other gas engineers have experienced, and which were stated in my previous note on the process; and he has arrived at the conclusion "that the invention is an important step in the right direction, and the increased economy, by its use under similar conditions to those existing at Tunbridge Wells, may fairly be estimated at 1s. to 1s. 3d., (24 to 30 cents) per ton of coal carbonized."

There is usually a little business done in the direction of gas agitation at this season of the year. I do not know whether the ordinary engagements of those individuals, who are so fond of looking after the rights of their fellow townsmen, are of such a nature as to leave them with spare time hanging on their hands at this period of the year; or if the approach of summer has an enlivening influence on their intellectual faculties; or if the two winter quarters gas bills have anything to do with it. Perhaps, speaking metaphorically, the Christmas bill, including gas consumed during the dark days of November and December, sets them at half cock; while another heavy bill for the equally gloomy months of January and February, coming in at the end of

March, completes the "cocking" and pulls the trigger. Be the cause what it may, complaints as to the price of gas usually spring up in several towns with the May flowers. This year is no exception, and amongst other towns where endeavors are being made to get up a cause for cheaper gas, Bristol, Huddersfield and Liverpool may be named.

Some Account of the Operations of the Paris (France) Gas Company During the Year 1883.

The following figures are taken from the report of the Directors of the Paris Gas Company read at the annual meeting which took place on the 27th of last March. A study of the details given will show the magnitude of the operations of the Paris Company during the twelvemonth ended December 31, 1883. After recounting certain difficulties that had arisen between the authorities and the company relative to a summary reduction in the price, ordered by the Prefect of the Seine without notice (an appeal to the legal tribunals from this order was subsequently carried to a successful issue by the Paris Company), the report goes on to a

REVIEW OF THE WORKING OPERATIONS FOR 1883.

Gas Consumed.—During 1883 the company delivered to consumers the gross amount of 283,864,400 cubic meters (10,024,955,150 cubic feet) of gas, this send out showing an increase, over 1882, of 8,495,695 cubic meters, representing the equivalent of 300,034,965 cubic feet. Of this product 72,049,055 cubic meters (2,543,331,890 cubic feet) is charged to day consumption. [We might here remark that this statement ought to open the eyes of some of the managers of our New York city companies. If the Paris Company can send out over 25 per cent. of its total make for purposes other than "night lighting," we do not see why it would not be worth while for our gas makers to "make an effort" towards accomplishing a trifle more in this direction than is now actually done by them.]

Receipts from Sales of Gas.—The receipts from sales of gas (1882) were 71,048,157 francs ($13,960,963); in 1883 the figures reached were 73,085,263 francs, or $14,361,254.

Consumers.—The total number of consumers on December 31 last, was 178,384, showing an increase of 9,033 (or 5.33 per cent.) over same date in 1882. [The American gas maker is constantly obliged to listen to the glowing tales of how electric lighting is fast undermining the position of his French confrere. These figures plainly show how fast the supports are being sapped, or rather they show what a surprising amount of "sap" is as yet being transmitted from the roots to the branches of the French "gas tree." We are not quite sure that Mr. Ruthrauff ever visited Paris; but if he did he must have inoculated divers French electricians with his peculiarly airy ways of telling what electricity was bound to accomplish in the way of artificial lighting. Indeed, Mr. Ruthrauff, from long and ardent practice in diffusing his exaggerations, finally came to the point where possibly he thought the old stories that he had retailed so freely were as true as "holy writ." Be that as it may, the plain facts in the case are that there is no other country in the world, at the present day, where electric lighting shows less signs of life than in France—despite the erstwhile brilliancy of the Avenue de l'Opera, and the Rue du Quatre Septembre.]

Public Lighting.—The number of public lights in use on December 31, 1883, was—

In the City of Paris	48,942
In the suburbs, etc	8,463
Total	57,405

an increase of 2,744 over the total in use at end of 1882. Of this number of public lights, 706 are of the class called the Rue du Quatre Septembre, consuming 50 cubic feet per hour, and 301 are of the sort known by the title of Place de la Republique, consuming about 31 cubic feet per hour. These improved forms of burners take their designatory titles from the names of the streets in which they were first installed. The greater number of the high power lights are placed at the intersections of the principal streets, and in such other positions as where good judgement would dictate the need of more than ordinary illumination. Burners and lamps of these descriptions, to a total of 2,059, have been erected by private individuals, and corporate enterprises, being usually placed at the porches of theaters, the entrances to hotels, cafe's, storehouses, etc. The entire number of high-power burners employed in Paris (at the expense of the civic authorities and ordinary consumers) at date of December 31, 1883, was 3,066—equal to about 26,700 ordinary street lamp burners consuming 5 cubic feet per hour.

House Services ("Conduites Montantes").—The company continues to place these services according to the usual custom. The number fitted up since the system was instituted reached 18,750 at the close of 1883, (distributed among 15,189 houses) an increase of 1,565 for the twelvemonth.

Principal Results of Past Working.—The following table shows the relative quantities of gas consumed annually from January 1, 1856, to December 31, 1883, with dividends received by the shareholders during the same period:

Year.	Gas Consumed. Cubic Meters.	Equivalent Consumption. Cubic Feet.	Dividends. Francs.	Dividends. U. S. Money
1855	40,774,400	1,439,988,710	—	—
1856	47,335,475	1,671,699,635	40	$7.86
1857	56,042,640	1,979,201,874	45	8.84
1858	62,159,300	2,195,217,838	50	9.82
1859	67,628,116	2,388,354,545	60	11.79
1860	75,518,922	2,667,027,249	70	13.75
1861	84,230,676	2,974,690,554	70	13.75
1862	93,076,220	3,287,079,785	85	16.70
1863	100,833,258	3,561,027,340	95	18.67
1864	109,610,003	3,870,986,866	105	20.63
1865	116,171,727	4,102,720,711	105	20.63
1866	122,334,605	4,320,368,910	110	21.61
1867	136,569,762	4,823,097,715	115	22.60
1868	138,797,811	4,901,783,493	120	23.58
1869	145,199,424	5,127,862,858	102[1]	20.04
1870	114,476,909	4,042,866,518	40.50[2]	7.96
1871	87,481,346	3,089,491,215	32.50	6.39
1872	147,668,331	5,215,054,778	51	10.02
1873	154,397,118	5,452,688,619	52.50	10.32
1874	160,652,202	5,673,590,166	55	10.81
1875	175,938,244	6,213,435,025	60	11.79
1876	189,209,789	6,682,132,908	62	12.18
1877	191,197,228	6,752,321,304	62	12.18
1878	211,949,517	7,485,209,142	65	12.77
1879	218,813,875	7,727,630,809	65.50	12.87
1880	244,345,324	8,629,299,462	74	14.54
1881	260,926,769	9,212,889,774	78 50	15.43
1882	275,368,705	9,724,921,186	82.50	16.21
1883	283,864,400	10,024,955,150	68	13.36

1. In 1869 the Company began to divide with the city of Paris that portion of the profits of manufacture exceeding 12,400,000 francs ($2,436,600).

2. The shares having been divided into two in 1870, in order that the figures rendered for this year and succeeding years may be compared with years preceding 1870 the totals given must be multiplied by 2.

[To be continued.]

The Sale of Coke by Measure or Weight.

In a letter from our English correspondent, published in the issue of May 2d, the fact was mentioned that the sale of coke by measure or weight was attracting much attention on the other side of the water. This topic has often been discussed, from almost every conceivable point of view, among our American engineers; and, we are sorry to say, despite the variety of arguments advanced *pro* and *con*, the whole matter seems about as far from final adjustment as ever.

Mr. George Livesey, in a recent issue of the London *Journal*, contributes an interesting letter anent the mooted points, and we judge it to be of sufficient value to warrant its reproduction in our columns. Mr. Livesey says:

The many able letters on the sale of coke by weight that have appeared in the *Journal*, in response to mine of the 19th of February last, indicates a widespread interest in this question, and point, in the majority of cases, to the conclusion that it is desirable, where coke is now sold by measure, to adopt the system of weighing. There seems to be a conviction that sale by weight is best; but the natural dislike to change, a fear of interfering with the trade, the bugbear of wet coke, and other anticipated difficulties, have hitherto stood in the way. An attentive perusal of the letters of your various correspondents will, however, show the ease with which the change can be effected, and that the expected difficulties will vanish, and,

'Like the baseless fabric of a vision,
Leave not a wrack behind."

Weight is fast superseding measure; and has already, with very few exceptions, become the rule. Corn, coal, coke, potatoes, and most other commodities which were, within living memory, universally sold by measure, are now generally sold by weight—either by the ton, hundredweight, or bushel of so many pounds. A glance at the quarterly returns of the Board of Trade, which appear in the daily papers, will show that every article not obviously unsuitable for sale by weight is so dealt with, including coke, which is actually so sold over the greater part of the kingdom.

The Weights and Measures Act of 1878, in abolishing the indefinable heaped bushel (and with it the chaldron), practically made the sale of coke by measure illegal, because the legal "strike" bushel cannot be used for coke, which cannot be and never is "struck." The Committee of the London Coal Exchange, seeing this opportunity for extending the sale of coke by weight over the South of England, sent a circular to the gas companies, recommending the change; but it did not meet with any general response. A

special meeting of the Southern District Association of Gas Managers was held for the purpose of considering the question, when a remarkable unanimity of opinion was shown in favor of the change. Some of those present, including myself, agreed to adopt it; but, owing to the two amalgamations with the South Metropolitan Company that were then on foot, I was compelled to defer carrying it into practice until July 1, 1880. In the meantime the Chartered Company altered the sack to the cubic contents of 3 strike bushels, and the chaldron to 12 of these small sacks—a reduction equal to about one-fourth—which caused great dissatisfaction, and resulted in a return to something like the old chaldron, consisting of 12 "measures," of 4 strike bushels each, or 61.44—say 61¼—cubic feet, against about 60 or 62½ cubic feet, which was variably considered the equivalent of the old chaldron. There is at present considerable confusion. Many companies continue (as their accounts show) to sell by the old and illegal chaldron of 36 heaped bushels; others reckon 48 strike bushels to the chaldron; while others again sell by weight, adopting as their unit the hundredweight, which is equal to about a sack of 4 strike bushels filled with ordinary or average-sized coke. The size of the pieces of coke is a most important element. There is, in some quarters, a prejudice in favor of large coke, evidenced by the well-known cry of the smaller dealers shouting in the streets, "Fine large coke!" which, sold by measure, means that the unfortunate buyer is, as "Old Hand" cleverly and quaintly puts it, purchasing air instead of fuel, and may amount, as stated by my brother in his letter to the *Journal* of the 18th ult., to nearly 20 per cent. loss of fuel. Coke, as is well known, varies in size considerably in consequence of the size and form of the retort and mouthpiece, and from exposure to the weather; to say nothing of broken coke, which must come rapidly into extensive use where companies are wise enough to break it—and broken coke cannot be at all satisfactorily sold otherwise than by weight.

The following are some of the objections and disadvantages of selling coke by measure:

1. The inherent difficulty of fairly measuring such a substance as coke, whether in sacks or in bulk, in trucks or in barges; and the certainty that it will never measure so much on being discharged as when put in; thus leading to constant complaints and allowances unless excessive measure be given.
2. The great difference in actual quantity of fuel a given measure will hold when filled with small, medium-sized, or large coke.
3. The opening for fraud, and the great difficulty of checking or detecting it.
4. The impossibility of ascertaining the actual quantity of coke sold, and the proportion it bears to the quantity of coal used; and the consequent inability to estimate, with any approach to accuracy, the quantity used as fuel.
5. The impracticability of developing the trade in broken coke, the sale of which by measure necessitates an extra charge of from 30 to 50 per cent. which is a great obstacle to business.
6. The fact that measure is not recognized officially, as is evidenced by the Board of Trade returns, and in the requirement of the City of London that measure shall be converted into weight for the purpose of claiming the drawback; that measure is almost unknown except in the South of England; and that there it is being gradually abandoned.
7. That the universal adoption of one uniform system would tend to the general advantage of the trade, by placing both buyers and sellers on an intelligible footing.

I have looked in vain, in the correspondence in the *Journal*, for a defense of the system of measure, and must therefore conclude that others, like myself, are unable to say anything in its favor, except perhaps the fancied difficulty, and the natural dislike to make a change; while, on the other hand, all who have tried weight, and many who have not, see that it has many advantages, some of which are as follows:

1. The ease, simplicity, and accuracy of weighing, and the certainty that it will be the same at the end of the journey as when loaded; thus rendering complaints and disputes impossible.
2. No variation in the actual quantity of fuel in a given weight, whatever may be the size of the coke.
3. The ease with which fraud may be checked and detected; thus rendering its perpetration improbable. Moreover, sacks are not necessary; the check being perfect without them, which is not the case with the measure system.
4. The ready means afforded for ascertaining the exact quantities of coke made, sold, and used; thus furnishing the necessary data for testing the yield relatively to the coal used, and the proportion used as fuel.
5. The difficulty in the way of the sale of broken coke is removed.
6. It conforms with official practice, with the letter and the spirit of the Weights and Measures Act, with the system already most largely in vogue (which is spreading), and with the method of purchasing coal.
7. It is a definite and perfectly intelligible system.

It will doubtless be said again, notwithstanding the very clever and complete refutation already given by your correspondent "A. B.," "But coke is so porous, and so readily absorbs water, that its weight will greatly vary according to its wet or dry condition." Let those who make this remark read "A. B.'s" letters, and let them also consider that its very porosity makes evaporation most easy—so easy, in fact, that I have no hesitation in saying that in this climate a heap of coke exposed to the weather will, taking one week with another, not become heavier, but maintain its normal condition.

This discussion has laid bare the popular error which, like many other such errors, has hitherto beeen accepted without question, and which most of us regarded as a fact that need not be tested or proved, that coke exposed to the weather necessarily becomes heavier through the absorption of water; forgetting that evaporation is, with insignificant exceptions, *always* going on, even during rain—rapidly in the daytime, slowly at night. The only time when it is at a standstill is during a fog. Mr. Glaisher has kindly furnished me with a table showing the humidity of the air on every day of the year 1883. There were only seven days of complete saturation—viz., Feb. 8, May 26, Sept. 21, Oct. 29, and Dec. 25, 26, and 27. "This number," Mr. Glaisher says, "is greater than the average, owing to the very unusual fact of the prevalence of a fog for a week in December." The daily weather reports published in the *Times* show, under the heading "Drying power of the Air per 10 Cubic Feet," the grains of moisture it is capable of absorbing. An inspection of these reports, together with an examination of the dry and wet bulb thermometer curves in the weekly weather reports, will prove that almost without exception—winter and summer, night and day—the air is exerting a drying influence. This point has been clearly and forcibly stated by "A. B.," and is proved by a number of experiments I have lately made, and had made, on large and small quantities of coke, with results which may be summarized as follows: Coke completely saturated by soaking in water or by rain will, when exposed to the air only, without wind or sun, in a covered shed, return to its normal state in about a week; and in about half this time if exposed to the full action of the wind and sun on the top of a heap. The conclusion at which I have arrived is that, wet coke as you may, or dry it as you will, you can do but little to alter its weight; for in a few days it will return to its ordinary state, which is not that of absolute dryness. Coke, in fact, belongs to the class of hygrometric substances described in the "Imperial Dictionary" as "such as readily absorb and impart moisture."

The effect of heavy rain on a heap of coke is to saturate the top layer only, which forms a comple cover or protection to the mass underneath, as is evidenced by the dry and dusty appearance shown when working into the side of a heap. The absorbent power of coke is so great that the heaviest rains penetrate but a very little way; and as this is the part that is fully exposed to the drying influences of the atmosphere, a few days restores it to its original condition. It is therefore a great mistake to suppose that any advantage would result from keeping coke in covered sheds. Further, in a heap of coke immediately after heavy rain the wetted part bears so small a proportion to the whole that no appreciable effect is produced on the weight, as filled from the heap, and no allowance is necessary. It is quite true that, on loading from a heap that has been exposed for some months to the weather, a trifling allowance has occasionally to be made because the coke, having become smaller through the combined action of the weather, the pressure of the heap, and stacking, a hundredweight will not quite fill the ordinary sack; and as the dealers have been accustomed to buy by measure, they think (or their customers think) that unless the sack is about full they have not their proper quantity. With the universal adoption of weight, this small difficulty would disappear; but it is even now so very small that it is hardly worthy of notice. The practice is, on the rare occasions of giving a little extra weight, for the coke foreman to mark the ticket, which is shown to the coke clerk when passing the weighbridge, and he sees and records it.

So much for the bugbear of water being sold instead of coke. All who sell by weight being agreed that the difficulty exists only in the imagination of those who have not tried the system, the only obstacle worthy of consideration suggested in the correspondence is that of Mr. J. H. Lyon, who fears that by selling coke by the ton the price would be so near that of coal that his customers would be deterred from using coke. This was one of the reasons which led me to adopt the hundredweight as the unit, in order not to draw prominent attention to the relative prices of coal and coke. But, after all, coke must stand upon its own merits; and, whether sold by weight or measure, its users soon find out the relative values. All I can say is that in the case of the South Metropolitan Company the change from measure to weight has not, in this or any other particular, caused the slightest difficulty or inconvenience, or given rise to any complaint of dissatisfaction whatever. The price is now 9d. per hundredweight at some stations, 10d. at others;

equal, respectively, to 15s. and 16s. 8d. per ton. This, for manufacturers at least, is not far from the price at which they can purchase coal. Many of them, however, use coke, which is evidence that it answers their purpose better than coal. I may here mention that they are finding out that the broken coke—though 1d. per hundredweight is charged for breaking—is more economical than the large coke. The combustion is more perfect; the excess of air passing through the furnace (which means loss of heat beyond that required for combustion) being less than when large coke is used.

The South Metropolitan Company made the change at a time when the recent action of the Chartered Company, in altering the size of the sack, and their return to the original sack, might be supposed to have thrown a difficulty in the way. It was effected on July 1, 1880, immediately after the Phœnix amalgamation. A supply of 1-cwt. weighing machines (for use on the coke ground, as a guide to the coke fillers), known as "bob up" machines, was obtained; weighbridges were fixed at the coke office, or entrance to the yard, thus ensuring a double check; a notice was posted up, copies of which were sent to regular customers, stating that on and after the above-named date, and on the expiration of any contracts that might be in force, all coke would be sold by the hundredweight instead of by measure—the hundredweight being about equal to the sack, and 12 cwt. to a chaldron. The adoption of the hundredweight as the unit (being the equivalent of a sack) had the result of making the change inappreciable. The practice of the dealers had been, generally, to ask for so many sacks of coke. They now ask for so many hundredweight or sacks, as they please; whereas, had the ton been adopted, a certain amount of confusion would have resulted, and there would have been some trouble with the price, as even shillings or sixpences would not do, not being divisible by 20. The great convenience of the hundredweight as the unit is so great that I unhesitatingly recommend its adoption, and deprecate the use of the ton.

It would not be fair did I not refer to the only objection to the change from measure to weight that has occurred to the South Metropolitan Company. From their river-side stations they sell into barges a proportion of their coke to large contractors for cement making, etc. These persons make comparisons with other companies who sell by measure, and who, in order to prevent disputes as the result of short measure in discharging, give a considerable excess. A contractor says, "I sent the barge Neptune to such and such a place, and was charged for 65 chaldrons. I sent her to your works, and for the same bulk of coke you have charged me for 840 cwt., the equivalent of 70 chaldrons." Our reply is, "We have nothing to do with chaldrons or with what other companies may do. We contracted to sell by the hundredweight, and have given you 840 cwt., good weight. If you choose to weigh it out, and find it short, we will allow the difference and pay the cost of weighing."

A reference to Mr. Field's "Analyses" furnishes a corroboration. I extract the following figures from the last published (those for the year 1882):

	Coke Made per Ton.	Average Price per Chaldron Sold.	Amount Realized per Ton of Coal Used.
		s. d.	s. d.
Gas Light and Coke Co..	42 strike bushels.	5 2.42	4 7.96
Commercial.....	46 "	5 6.39	4 10.98
London.....	45 "	6 0.95	5 2.55
South Metropolitan....	50 " or 12½ cwt.	5 4.50 per 12 cwt.	5 7.48

There is little doubt that the three companies who sold by measure gave a greater quantity for a chaldron—partly as excess deliberately given, and partly as the want of an efficient check on the fillers—than the South Metropolitan gave for 12 cwt. Had the Chartered Company, for instance, given only the same quantity as the South Metropolitan, there would have been a greater difference than 2d. in the price realized per chaldron. There is, in fact, no doubt that all the companies make 50 strike bushels to the ton, and it is for those who show less than this quantity to say where the 8, 4, and 5 bushels respectively have gone. It must be either in the measure or the fuel. The returns per ton of coal in the third column also show most clearly that the company which sells by weight actually brings into revenue a larger amount than any of those that sell by measure, notwithstanding the fact that the price realized per chaldron is the lowest but one. It must be remembered that all the companies have not an equally good market for coke; but those which appear to have a better market than the South Metropolitan—viz., the Commercial and the London—lose their advantage when brought to the real test in the third column; and this, until the contrary is proved, may be taken as the result of their method of sale.

Why cannot a general change be made by all the companies who now sell by measure—say on and from the first of July next? The Crystal Palace District Gas Company has fixed on this date for the change, which is due to the desire of the chief officers of the company to place the sale of coke (especially into trucks and as broken coke) on a satisfactory footing. If other companies, and particularly those in the neighborhood of London, will follow thir example on the date I have suggested, I am quite sure they may rely upon the officers of the South Metropolitan and Crystal Palace Companies for their cheerful assistance in giving all necessary information for the carrying out of this great and desirable reform.

I have only, in conclusion, to thank you for the prominence you have given to this question in the pages of the *Journal*, and also to express my thanks to those gentlemen who have contributed so much valuable information on the subject, and especially to Mr. Stelfox for his objections, which brought fourth rejoinders that would, if "bogies" were at all substantial, at once and forever annihilate the "bogey" of wet coke.

Treating Timber.

In a paper recently read before the Institute of Civil Engineers (England) by Mr. S. B. Boulton (the subject of same being the "Antiseptic Treatment of Timber") the author introduced his remarks with the statement that his late partner, M. H. P. Burt, presented a paper on the subject of Timber-Preserving, which had been read at the Institution in 1853. Since that date the use of antiseptics for the treatment of timber had greatly increased. The process called creosoting, or the employment of the heavy oils of coal tar, had almost entirely displaced the other methods, whilst the manufacturers connected with the residual products of gas-making, from one of which residuals the creosote oils were derived, had experienced an enormous development. The author's connection, during thirty-four years, with this group of industries, enabled him to offer the results of some personal experience and research, which he presented, together with those arrived at by other investigators.

An historical description of the antiseptic treatment of timber was preceded by a few notes on the methods pursued by the ancients for the preservation of wood and other perishable materials. The ancients were well acquainted with the manufacture and use of many kinds of oils, tars, and bitumens, and frequently used them for the preparation of wood, with respect to which some notable instances were cited. The methods employed by the Egyptians in embalming their dead were dwelt upon at some length, and the author endeavored to elucidate some discrepancies in the descriptions of these processes, as recorded by Herodotus and Diodorus Siculus. The researches of Pettigrew were alluded to, particularly his interesting experiment upon the heart of a mummy, which, after 3,000 years' preservation began immediately to putrify, when the antiseptic substances were removed by maceration. This appeared to prove that no chemical transformation had taken place, but that the immunity from decay had been the result of the abiding presence of the antiseptic.

The growth of theories upon the causes of putrefaction was traced down to the commencement of the present century, reference being made to the "Phlogiston," and other exploded theories; also to the opinions of Macbride, Sir John Pringle, Sir Humphrey Davy, Thomas Wade and others, and to their suggestions upon timber preserving. The progress of timber preserving during the railway era, and particularly between the years 1838 and 1853, was described with especial reference to the competition between the four most successful of the processes. These four consisted in the employment of corrosive sublimate, sulphate of copper, chloride of zinc, and heavy oil of coal tar, which had been patented in England respectively by Mr. J. H. Kyan, Mr. J. J. Lloyd Margary, Sir Wm. Burnett, and Mr. John Bethell.

The distinction was pointed out between the real creosote, a product derived from the distillation of wood, but which had never been employed for injecting timber, and the so-called creosote which had been so successfully used for that purpose, the latter being a heavy oil produced from distillation of gas tar. The theory that certain antiseptics preserved timber by coagulating the albumen, and by forming insoluble combinations with the woody fibre, had been advanced on behalf of all the four processes alluded to. But in spite of some acknowledged success, Kyanizing, Margaryzing, and Burnettizing systems were not found to be so durable in their effects as creosoting. Indeed the salts of metals are gradually washed out of timber exposed to the action of water. On the other hand the success of the creosoting process became completely established.

In order to show the process of manufacture of the creosote oils, a short description was given of the ordinary methods of tar distilling. Coal tar, a black viscous substance, was a residual product of gas making. It was split up by a preliminary process of distillation into three groups of substances—namely:

1. Oils lighter than water, containing tne naphthas, benzoles, toluols, and other bodies, from some of which the aniline dyes were manufactured. This series of oils had never been used for timber-preserving.

2. Oils heavier than water; the dead oils or creosote oils of the timber-yards. These oils contained a great variety of different bodies, the properties of some of which were described, including carbolic acid, cresylic acid, naphthaline, anthracene, crysene, pyrene, quinolene, leucoline, acridine, cryptidine, etc.

3. Pitch, the residuum of the distillation.

The creosote oils varied in their characteristics in different districts, according to the nature of the coal used in the gasworks, and to the varying temperatures at which the coal was carbonized. The type of creosote called "London oil," made from the tars derived from the coal of the Newcastle district, was contrasted with the so-called "country oil," typical of the product from the tar of the Midland and other coals. The former contained less of the carbolic and cresylic acids than the latter, but more of the semi-solid substance, which solidified within the pores of the timber, and more of the antiseptics which did not volatilize except at exceedingly elevated temperatures. The history of the controversy as to the respective merits of the two types of creosote oils was fully gone into. The carbolic and cresylic acids had been recognized as potent antiseptics; their presence appeared to arrest the action of all destructive germs, and the lighter and thinner country oils, which contained a comparatively large percentage of these tar-acids had, therefore, been preferred by many. The opinion of Dr. Letheby to that effect was recorded. On the other hand, were cited the opinions and practice of the introducers of creosoting, and of the earlier operators in that process, used in preference the heavier types of creosote; and the early success of that creosote, both in England and in tropical countries, appeared to confirm their judgment. A number of experiments were then alluded to, stretching over long series of years, and conducted by investigators in this and in other countries for the purpose of ascertaining which of the component portions of the creosote were the most durable and efficient agents in preserving timber. The results of these experiments appeared to show that it was not to the tar acids, but to the heavier and least volatile portions of the creosote, and to those bodies which solidified within the pores of the timber, that the most durable results should be attributed. This apparent anomaly was explained by reference to numerous eminent authorities upon carbolic acid, who, whilst extolling its action as a most useful and powerful antiseptic for sanitary and surgical purposes, were in general agreement as to its possessing the following characteristics: That it was exceedingly volatile at ordinary temperatures, that it was readily soluble in water, and its combinations with the other bodies, including albumen, were not stable. It would readily evaporate from timber exposed to the heat of the sun, especially in warm climates, and it would be washed out of timber in contact with water. The author's personal experience and experiments fully bore out the conclusion, that the use of the heavier and less volatile portions of the creosote oils should be encouraged, and that from them the most durable results might be expected. Moreover, it was pointed out that recent investigators have discovered in these heavier oils bodies which, if perhaps less potent, were more durable in their antiseptic effects than carbolic acid. By judicious selection and admixture both London and country oils can be usefully employed. Shale oil and bone oil, however, and other oils lighter than water, should be excluded.

The modern-germ theory was discussed in its relation to timber-preserving, and was believed by the author to be a more practical explanation of the action of antiseptics upon wood than the older theories, as to the coagulation of albumen, and the formation of insoluble compounds. With respect to all bodies which have been extensively used for timber-preserving, their durable results appeared to be in an inverse ratio to their volatility in the atmosphere and their solubility in water. The germ-theory constituted a severe but salutary test in choosing antiseptics for the treatment of wood. In the author's opinion the substances preferred should be not only germicides but germ excluders; those being the best which were least soluble in water, least volatile in air, and most capable of becoming solid within the pores of the timber.

A description followed of the various kinds of apparatus which had been in use during the present century for injecting timber with antiseptic liquids. The paper concluded with some remarks upon the subject of the hygrometric condition of timber at the time of injection, failures having repeatedly arisen owing to the timber being too wet at the time of creosoting. The author dwelt upon the importance of this subject, describing also his experience with various methods of getting rid of superfluous moisture artificially, and of a process which he had recently inaugurated, by which this result could be obtained in the creosoting cylinder itself without injury to the timber.

The paper was illustrated by diagrams showing the most important products derived from coal, and the apparatus of coal-tar distillation and timber-preserving; also, by tables, giving the properties of coal-tar products and other substances, of timber-preverving specifications, and of more than 100 references to various authorities upon the topics alluded to in the paper.

The Painting of Iron.

A writer in the *Railroad Gazette*, in considering the sort of paint that acts as a most efficacious protector of iron, says that "among the things that require the most protective paint for iron are carriages, farm wagons, plows, and agricultural implements, from which fact it seems feasible that manufacturers of the like ought to be able to give the best information required. Any mineral paint would answer the purpose fairly well, but I maintain that the paint that most effectually protects iron is red lead. Not alone in color, as it is well suited, but that is only a secondary consideration, and easily overcome by painting it over with any color desired. It contains the following advantages to be gained: First, Dries easily with raw linseed oil, without an oil-destroying dryer; second, after drying it remains elastic, giving way both to the extension and contraction of the iron, without causing the iron to crack; third, it imparts no oxygen to iron, even when constantly exposed to damp—a fact to which all farm wagon makers can testify; fourth, it hardens, where it has been spread thickly, without shriveling, forming the toughest and most perfect insoluble combination of all paints. As proof of this assertion it is used by calico printers for red prints, holding out against soap and water; by gas-pipe fitters, as the best paint to resist ammonia and tar; by English iron ship builders, for painting the hulls of iron ships, namely two coats of read lead and two of zinc white; by wagon and plow makers, for painting wagon gears and plows; by knowing carpenters, for painting wood that comes in contact with damp brick in walls, as it preserves wood from rot, insects, etc. For those among us who are uninstructed how to mix pure red lead for paint, it should be made known that pure red lead powder, after being slightly pressed down with the finger, shows no lead crystals. When they are visible, it is merely partly converted, and not first quality. It should be ground in pure old linseed oil, if possible, used up the same day to prevent its combining with the oil before it is applied, losing in quality. No dryer is necessary, as in the course of a few days the oil forms a perfect, hard combination with the lead. American linseed oil is as good as any imported, where the manufacturer has given it age, and not subjected it to heat, as is the custom, by steaming it in a cistern, to qualify it quickly for the market. It deteriorates in quality when heated above 160° F. This red lead paint spreads very easily over a surface, and the best finish can be made with it, even by a novice in painting."

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

Annual Report of the Jamaica Plain (Mass.) Gas Light Company.—Mr. John C. Pratt, President of the Jamaica Plain Gas Light Company, acting in behalf of the board of direction, handed in his annual report to the stockholders on date of April 30. The report details the operations of the company for the year ending March 31, 1884, and from it we learn that the receipts for the twelvemonth reached a total of $55,505.06, of which sum $51,275.46 was received for sale of gas—the receipts for residuals (coke, tar, etc.) being $3,613.77. The expenditures for the year are placed at $35,945.39; coal representing $14,555.65, salaries, labor, etc., being set down at $11,008. The net profit for year figures as $19,559.67; and out of this sum two semi-annual dividends of 4 per cent. each (aggregating $16,000) have been paid, leaving a surplus of $3,559.67. From this surplus is deducted the cost ($2,714.16) of laying a new street main along a portion of Washington street, the placing of this larger conduit having been made necessary through the increased demand for gas supply in certain portions of the city. The surplus balance for year to be added to surplus on hand April 1, 1883, was $845.51, making the sum to the credit of this account foot up a total of $32,923.26. The net earning of the company for past year was $19,559.67, against $19,415.21 for preceding year, showing a small gain. If the gain is but a trifling one on its face, it should be remembered that, on April 1, 1883, the company reduced the selling price by 25 cents per 1,000.

The result of the reduction ought to be perfectly satisfactory to the stockholders, as the rate of dividend received by them is not impaired, and the business is assuredly placed on a more solid basis. In fact, in alluding to this matter, President Pratt says, "This is a gratifying result, and proves the wisdom of that reduction. It is to be hoped that, before long, the directors may be enabled to grant a still further reduction." The output for year just closed shows a gain, over that of 1883, of 1,168,509 cubic feet. The average yield of make per pound of coal was 4.77 cubic feet, and the average illuminating power of gas product, over entire year, showed a fraction over 18 candles. The number of tons of coke sold reached 1,241, being about 55 per cent. of whole quantity made. This percentage would have been largely increased were it not for the fact that it was often necessary to keep one or two extra benches fired up in order to furnish a comparatively trifling amount of gas on certain days marked by gloomy atmospheric conditions. During last summer was undertaken the work of a thorough and careful inspection of consumer's meters; every meter that had been more than a year in use was taken out and submitted to careful examination, the result of the tests proving highly satisfactory to the company and to the consumers. A very small number of meters are set down as registering "fast," the percentage of such registration being only three. The general average registration of all the meters tested (fast, slow, and correct) was 2 per cent, "slow." We would commend to Mr. Sherwood, the New York city resident, who for some time

back has been airing, through the daily newspapers, his grievances (and ignorance) concerning the "fast" registering gas meters supplied by certain gas companies in the metropolis, to a consideration of the statements set forth above. [While on the subject of Mr. Sherwood and his troubles anent this question, it is needless to add that the "great 2 cent dailies" are giving all possible countenance and support to that "badly-abused" gentleman; and the basis for the newspaper assistance seems to resemble very much the ground taken by a certain editor of a certain sheet, in the days when the "know nothing" element stalked through the land in the "good old times, before the war." This particular editor was asked why he so frequently assailed the "Pope of Rome" through the columns of his paper. He replied that oftentimes he lacked lively themes for editorials; on such occasions when pressed to the wall for "brilliant thoughts," he took down a plaster cast of "the head of the faithful," worked himself up to a proper state of frenzy by a contemplation of the plaster model, and then easily dashed off the requisite philippic. So it is with the average New York city editor; lacking a sufficiently "meaty" subject he turns toward the gas companies, giving full play to his imaginative fancy, and knowing that the majority of his readers understand as little about the subjects of gas making and gas measurement as he does himself, feels measurably safe and certain in the belief that he will have a large circle of coinciding believers.]

In closing his annual report to the stockholders, President Pratt concludes by stating, "The condition of the company is as favorable to those financially interested in it as it has been at any time in the past, and with the maintenance of the policy which we have always adhered to, of keeping the price of gas down to the lowest point practicable, consistent with regular payment of fair dividends, we may reasonably look forward to a continuance of the friendly relations that have hitherto existed between our customers and ourselves." When will the time come that reports similar to this may be expected from all of our gas companies? The publication of such matter has never interfered with the best interests of the Jamaica Plain Company, nor would a similar course be productive of injury to any gas undertaking.

Awarding Gas Coal Contracts, Philadelphia, (Pa.) Gas Trust.—The Board of Trustees of Philadelphia Gas Trust recently awarded the following quantities of coal to be supplied during 1884, at prices named:

	Tons.		Price per Ton.
The Westmoreland Coal Company	175,000	@	$4.00
Penn Gas Coal Company	175,000	@	4.00
Chesapeake and Ohio Railroad (Kanawha), delivered at Fifteenth Ward works	20,000	@	4.15
Despard Coal Company	20,000	@	3.97
James Boyce (Gaston coal)	20,000	@	3.94
Newburgh Orrel Coal Company (Tyrconnel, subject to tests of "Trust" engineer)	5,000	@	3.90
West Fairmount and Marion Consolidated Coal Company, of West Va., G. Van Allen, Receiver, subject to test of "Trust" engineer	5,000	@	3.89

Fireclay Goods Contract.—Messrs. Evens & Howard, of St. Louis, Mo., have been awarded a contract for furnishing the Philadelphia (Pa.) Gas Trust with 360 retorts, together with the necessary fittings, the whole amounting to about 60 car loads of clay products. This looks very much like "carrying coals to Newcastle."

New Holder for the Youngstown (Ohio) Gas Company.—The Youngstown folks are busily engaged in preparing the tank for a new gasholder, to be 60 by 20 feet, with a calculated capacity of 56,000 cubic feet. The excavations are completed, and the tank walls are about one-third "up." The Kerr Murray Manufacturing Company, of Fort Wayne, Ind., has the contract for the holder proper, and the specifications call for the completion of the work by August 15. They must be selling some gas at Youngstown, and in this connection it might be as well to remember that the company reduced the schedule price some short while ago.

Coming Back to Their Senses.—The *Electrical Engineer*, in discussing electric lighting from a commercial point of view, seems to point out that electricians are at last getting back to a proper state of mind, when dealing with their favorite subject—viz., what electricity is to accomplish in the field of artificial lighting. This is about the way the above-named authority now puts it:

"Whatever the future popularity and success of the electric light may be, it appears to be generally conceded that little or no profit can be derived from its production at a price per unit of effective light below that of illuminating gas. Perhaps the most serious of the many mistakes which have been made in the establishment of electric lighting as a profitable and permanent business was the premature announcement of many of its enthusiastic promoters that it would be found to be a cheaper illuminant than gas, which, with certain exceptions due to the presence of special conditions, has not proved to be the case. Had the ground originally been taken that the light was of better quality, more healthful and more convenient—in fact that it was a luxury, well worth its increased cost to those who could afford to use it, the public demand for it might perhaps not have been quite so rapidly developed, but there can be no doubt that the business would have been in a far more satisfactory condition to-day than it actually is." The cure is almost as bad as the disease; but it is rather a pity that the cure was not applied before so much money was beguiled from the pockets of too easily impressionable investors. Still, the heroic course of treatment actually pursued exposed the hollowness of the bubble of electric lighting in much shorter space of time than had the slow and easy style prevailed.

Money for Gas Mains.—The appropriation of $55,000, for the extension of the main distribution system of the Richmond (Va.) Gas Works, allowed by the Common Council of that city on May 5, was concurred in by the Board of Aldermen on May 12. We are glad to announce this fact, as the distributing facilities were decidedly inadequate to the past winter's make.

One More Death.—Ellen G. Smith, a young woman employed as a domestic in the family of Daniel Bulkley, of No. 30 Third avenue, New York city, retired to her sleeping apartment on the night of May 7, and before getting into bed supposed she had turned off the gas. The stopcock attached to the bracket was defective, being without a pinion, and the unfortunate woman turned the gas on immediately after turning it off. Her non-appearance at the usual hour on the following morning caused an inquiry to be made, which resulted in the discovery that the woman had been suffocated by the inhalation of illuminating gas.

An Intelligent Engineer.—An explosion of natural gas occurred at the paper mill of Harvey & Bros., situated at Wellsburg, West Va., on date of May 18. It appears that engineer Isaac Jones had turned on the unignited gas under the boilers, for the ostensible purpose of cooling them off so they might be entered and cleaned! He then left the boiler room for a while, returning when he thought the cooling operation was about completed; he also brought a light with him, and he now wishes that the light had been left behind, for the explosion that followed inflicted severe injuries on his body, besides damaging the property to a considerable extent. The establishment of Harvey Bros. employs natural gas as fuel; and it would seem natural to suppose the concern ought to employ an engineer who would know something about natural gas as a heating agent.

Another Gas Company for Yonkers, N. Y.—On Saturday, May 17th articles of incorporation of the Yonkers Fuel, Light, and Power Company were filed in the offices of the Secretary of State and the Clerk of Westchester county. The incorporators are Messrs. T. S. C. Lowe, of Norristown, Pa.; Halcyon Skinner, R. W. Van Pelt, and W. F. Lawrence, of Yonkers; and Evan Jones, of Brooklyn. The capital stock of the company has been placed at $300,000; the objects of the enterprise, as set forth in the articles, being "the manufacture, distribution, and sale of gas for fuel, light, and power, and the use of electricity, instead of gas, for lighting purposes, as the same now is, or may hereafter be, authorized by law." The officers are: T. S. C. Lowe, President; R. W. Van Pelt, Vice-President; Halcyon Skinner, Treasurer; W. A. Drinkwater, Secretary. It is presumed that the new company will absorb or take the place of certain other somewhat similar organizations doing business in and about the city of Yonkers.

Boston (Mass.) Street Lighting Contracts.—The city authorities of Boston, Mass., have entered into the following agreement with the various gas companies named below, for furnishing gas to the city's street lamps within the several districts supplied by the respective companies. These contracts were made to cover a period of three years, dating from May 15 last, except in the case of the Boston Gas Light Company, lighting the city of Boston proper, which contract was entered into twelve months ago, and has yet four years of life. The size of burners generally in use is four feet. The figures are as follows:

Charlestown Gas Light Company.—Four-feet burners, $1.75 per thousand feet; over 4 and less than 15 feet per hour, $1.60 per thousand; 15 feet and over, $1.30 per thousand.

Roxbury Gas Light Company.—Four-feet burners and up to 15 feet per hour, $1.65 per thousand; upward of 15 feet, $1.30 per thousand.

Jamaica Plain, Dorchester, and Brookline Gas Light Companies.—Four feet and upward, $2 per thousand.

East Boston and South Boston Gas Light Companies.—Four feet burners $1.85 per thousand; over 4 and less than 15 feet, $1.75 per thousand; 15 feet and upward, $1.50 per thousand. The Boston Gas Light Company's contract (alluded to above as made a year ago and to last five years) was made at the rate of $1.30 per thousand.

A careful reading of Section II. of the agreement between the several contracting parties, reveals the fact that the gas companies certainly have secured permanency of lighting for at least three years. The section is as follows :

"II. The said party of the second part agrees to furnish said gas on each and every night during the term of this contract, as hereinafter agreed, in such manner and between such hours as the Superintendent of Lamps of said city shall direct, it being agreed and understood that the hours of burning shall not be less than 3,828 per annum, for each lamp, and that the number of lamps to be lighted with said company's gas shall not be less, at any time during the term of this contract, than the number now lighted with it ; and that all *additional* lamps, along the line of said company's mains, ordered by said superintendent of said city, to be lighted with said company's gas during the remainder of the year 1884, shall *increase the minimum* number to be so lighted, during the remainder of the term of this contract, to the *extent* of the number so added."

Disturbing the Fire Alarm System.—Residents of Toronto, Canada, have recently been complaining about the danger attending the stringing of electric lighting conduits on the same poles carrying the fire alarm wires. The light wires have several times interfered with the fire system, and public sentiment appears to be rather strongly impressed with the gravity of the situation. Mr. Gibson, the electrician in charge of the fire alarm signal system, when asked as to the reason why so much confusion existed in the transmission of fire signals, said : "The system is not so defective as is imagined, the electric light wires causing the chief source of trouble. In many places they run right alongside the fire wires, and at some points they cross each other. At night when the current is strong, and the lights are burning, it is almost a certainty that if the two wires are within a foot of each other an alarm will not reach the halls. I have protested to the committee against the electric light wires being placed so close to the fire wires, but without effect." The greatest care should be exercised in preventing any possible damage to the fire alarm systems of our cities, and it hardly seems reasonable to infer that such degree of care is observed when the wires are strung after the fashion followed in Toronto. Still Toronto is not the only place where a similar state of affairs exists, and it is shameful to be obliged to admit that town authorities are so careless of the interests committed to their charge.

Another List of Eastern "Reducers."—The notices of reductions in price of gas still keep coming in, and we are glad to note that they do, as such action is the best evidence of the vitality of the gas maker's business. Here is quite a list of the revised schedules of some our "down East" brethren :

On and after July 1, the Charlestown (Mass.) Gas Light Company proposes to furnish gas to ordinary consumers at the rate of $2.20 per thousand, with a discount of 20 cents per thousand when bills are settled for at any time within 15 days from date of presentation. The present rate is $2.30 per thousand. The Cambridge (Mass.) Gas Light Company, on April 1, reduced from $2.50 to $2.25 per thousand, with a discount of 25 cents per thousand for payment of accounts in 25 days from date borne. Roxbury (Mass.) Gas Light Company, on April 1, reduced the price from $2.30 to $2 per thousand. This looks like business, sounds like business, and is business.

Oil Tanks Fired by Lightning.—On the night of May 23, during the prevalence of a severe storm, a flash of lightning struck a huge tank, containing crude oil, owned by the Atlantic Refining Company. The works of the company are located on the Schuylkill river, in the southwestern portion of the city of Philadelphia, Pa. The fire spread with great rapidity, and the extent and magnitude of the conflagration may be estimated when it is stated that the flames were not entirely extinguished on the evening of May 26. The burnt district covered a space of about four acres, and is strewn with the wrecks of 32 massive iron tanks. It is estimated that the loss occasioned will exceed $500,000.

Two More Cases of Fatal Gas Suffocation.—Two domestics, Minnie Hills and Caroline Dittenhoefer, in the employ of Mr. L. Steinhardt, the occupant of an apartment in the flat at No. 49 West 35th street, New York city, were found dead in bed on the morning of May 16, having been suffocated during the night through the inhalation of illuminating gas which had escaped into their sleeping apartment from an open burner. It is stated that Miss Hills went to her room early on the night of the 15th, going to bed some hours before her companion entered the apartment, and it is supposed that the girl Dittenhoefer blew the light out instead of turning it off.

When Mrs. Steinhardt went to arouse the servants, they not making their appearance at the usual hour, she discovered them in the state noted above. Dr. Heineman, who also resides in the building, was summoned ; he decided that the girls had been dead for several hours prior to being discovered.

This One was not Killed.—A young woman named Lena Shepard, living at No. 53 West 47th street, New York city, was found lying on her bed, in an unconscious condition, on the night of May 16. The strong smell of escaping gas that pervaded the house led some one of the other inmates to make an investigation, and to this early discovery may the saving of Miss Shepard's life be traced. Dr. Katzenbach was called in, and under his treatment the sufferer was restored to consciousness. She explained that upon retiring for the night, she turned the burner partially off, leaving a slight light to burn through the night. Miss Shepard could not say how the extinction occurred, but if her dangerous position had not met with timely discovery, the usual story of "blew out the light" would have been told, with, perhaps, a suggestion that she did so through ignorance of the fact that "gas was made to burn and not to breathe."

About Baltimore's (Md.) Electric Lighting Contract.—The electric lighting promoters doing business in Baltimore, Md., have been trying to get a larger percentage of that city's street lighting than they now enjoy. We understand that a proposition was made to the Council, some time in last April, under the clauses of which it was sought to order the lighting of 200 additional arc lights. Not having been informed of what action was taken, we cannot say as to what disposition was made of the matter, but we do know this. When the city of Baltimore contracted originally for 225 arc lights at a total annual cost of $56,487.50, but 659 gas lamps, representing a total annual cost (including maintenance and repairs) of $23,124.31, were displaced. The difference in cost between the two systems shows an increase of $33,363.19 in the matter of expense, and this extravagant expenditure necessitated an addition to the tax levy of 1.9 cents on each $100 of taxable property, paid in large part by persons living in districts not in any manner reached by the decidedly expensive electric illuminator. Will not some of our Baltimore readers furnish us with a statement of what action was taken by the Council ?

Lighting Public Buildings in San Francisco, Cal.—At a meeting of the San Francisco (Cal.) Board of Supervisors, bids for supply of gas to public buildings for ensuing year were ordered to be considered. The clerk reported that but one tender had been sent in, and that had been made by the San Francisco Gas Light Company. The company offered to supply all the necessary gas at a price not to exceed $1.25 per 1,000 cubic feet. On motion the contract was awarded to that company.

Some of Our Western Advertisers Change Their Sales Headquarters.—The sales branch of the Goodwin Gas Stove and Meter Company, at Chicago, Ills., managed by Mr. E. H. B. Twining, formerly located at No. 126 Dearborn street, in that city, has been removed to No. 76 Dearborn street. The change was rendered necessary on account of the rapidly increasing business of the agency—not a bad reason, by-the-way—the old quarters lacking space for a proper display of the goods kept in stock.

The second change announced is that of the firm of A. Y. McDonald, manufactures of all sorts of pumps, gas, steam and water cocks, etc. The headquarters of this establishment have hitherto been at Nos. 15 and 16 Canal street, Chicago, Ills., but are now to be found at Nos. 83 and 85 North Clinton street in same city. The factories are located in Dubuque, Iowa.

Still "Hankering" after the Philadelphia (Pa.) Gas Trust Works.—Some time since we noted the defeat, in the Philadelphia (Pa.) City Councils, of an attempt which sought to transfer, for a certain sum of money, and under certain stipulations, the Philadelphia city gas works from the control of the city authorities to a syndicate of purchasers who desired the privilege of operating the plant on their own account. The attempt has again been revived, Councilman Hammett, at a recent meeting of the Philadelphia Select Council, having introduced an ordinance providing that the works shall be sold to the highest and best bidder ; that no bid of less than $15,000,000 shall be received ; that the purchasers shall furnish gas to 15,000 street lamps free of charge, and that they bind themselves to charge consumers only $1.50 per 1,000 cubic feet. The measure was referred to the Finance Committee. The lowest purchase figure in the attempt previously made in the same direction was fixed at $10,000,000 ; and from the new rate of valuation it certainly would seem that had the former bidders been successful in their attempted bargain a rather nice "plum" would have fallen to their lot—provided, of course, that somebody now will come forward and offer the present stated upset price. Perhaps the Gas Trust officials may find time to figure on what foundation the Council arrives at the fact that bidders are likely to come forward with the pledge of selling gas at $1.50, when the best that the Gas Trust officials can do is to sell it at about $1.90 ? This, too, under the presumption that, should the works be disposed of at the $15,000,000 figure, the purchasers are to be loaded at the outset with a large interest bearing burden. Talk about Philadelphia lawyers ; better give "the palm" to Philadelphia gas problems.

An Example Worth Studying.

No better exemplification of what may be achieved in the way of increased send-out, through cheapening selling prices of gas, can be instanced than by stating that the Chicago (Ills.) Gas Light and Coke Company's output for the month of April, 1884, shows an increase of 42 per cent. in comparison with the corresponding month of 1883—this, too, in face of the fact that they contended with an opposition company during last April, while having undisturbed possession of the territory in 1883.

The Market for Gas Securities.

Despite the absence of any connection between city gas shares and the present depressed and uncertain condition of the market for railway shares, brought about by the reckless dealings (or stealings) of men who were supposed to be possessed of financial acumen, the fact stares us plainly in the face that gas stocks also feel the influence of the prevailing distrust. There can be no disputing the statement that the intrinsic value of city gas stock has suffered in no degree or manner, and it is equally plain that a sharp reaction in quotations was recorded in the last fortnight. This applies also to the Brooklyn city shares. We predicted a fall in values, when speaking of the likely course of the market, in the May 16th issue; but, at the same time, noted that "the companies are on a strong footing, and their ability to pay dividends is undoubted." In order that rather convincing proof of the last part of the assertion may be made, it may be well to state that the Manhattan Gas Light Company pays a dividend of 5 per cent. on June 2; the Municipal Company also declared a dividend of similar amount payable on June 10. Two Brooklyn city companies reappear on the list of dividend payers—the Fulton Municipal and the Peoples, each paying 3 per cent.

Out-of-town shares are dull and listless, with a notable exception in the case of New Haven gas, which is strongly held at 164. For general prices, see below.

Gas Stocks.

Quotations by Geo. W. Close, Broker and Dealer in Gas Stocks (with W. B. Scott & Co.,)

34 Pine Street, New York City.

June 2.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share.

	Capital.	Par.	Bid	Asked
Central	$466,000	50	65	75
Equitable	2,000,000	100	90	93
Harlem	1,800,000	50	115	120
" Bonds	170,000		—	—
Manhattan	4,000,000	50	265	270
Metropolitan	2,500,000	100	220	225
" Bonds	658,000	—	107	110
Mutual	3,500,000	100	127	130
" Bonds	1,500,000	1000	104	106
Municipal	3,000,000	100	200	205
" Bonds	750,000		107	110
New York	4,000,000	100	150	154
Northern	125,000	50	70	80
" Scrip	108,000			
Gas Co's of Brooklyn.				
Brooklyn	2,000,000	25	129	131
Citizens	1,200,000	20	90	93
" S. F. Bonds	320,000	1000	106	110
Fulton Municipal	1,500,000	100	130	135
" Bonds	300,000		104	108
Peoples	1,000,000	10	75	80
" Bonds	290,000	—	105	110
" "	250,000	—	90	95
Metropolitan	1,000,000	100	85	90
Nassau	1,000,000	25	105	—
" Ctfs	700,000	1000	85	90
Williamsburgh	1,000,000	50	120	125
" Bonds	1,000,000	—	104	108
Richmond Co., S. I.	300,000	50	—	—
" Bonds	40,000	—	—	—
Out of Town Gas Companies.				
Buffalo Mutual, N. Y.	750,000	100	80	85
" Bonds	200,000	1000	95	100
Baltimore, Md			51	52
Citizens, Newark	918,000	50	99	103
" " Bonds	124,000	—	105	10
Chicago Gas Co., Ills.			150	155
Cincinnati G. & C. Co.			178	180
Consolidated, Balt.			51	51¼
" Bonds			113½	114
Central, S. F., Cal.			55	58
Capital, Sacramento, Cal.			57	59
Hartford, Conn	750,000	25	128	135
Jersey City	750,000	20	155	160
Laclede, St. Louis, Mo.	1,600,000	100	98	—
Montreal, Canada	2,000,000	100	186	187
New Haven, Conn		25	164	168
Oakland, Cal.			29	30
Peoples, Jersey City		—	85	90
" " Bonds			—	—
Paterson, N. J.		25	96	99
Rochester, N. Y.		50	70	80
Washington, D. C.	2,000,000	20	195	200
Wilmington, Del.		50	174	—
Yonkers		50	33	35
St. Louis, Missouri	600,000	50	255	256
San Francisco Gas Co. San Francisco, Cal.			50	51

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